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Original Contributions.

WESTERN DENTAL JOURNAL ON AMALGAM TESTS.

By G. V. Black, D.D.S., Chicago.

The editor of the *Western Dental Journal* has another editorial on amalgam tests in his March issue, in which he again demonstrates that he does not know enough of the subject to write of it intelligently. In my first article on the subject in 1895 (*Cosmos* for August, p. 637), I noticed these tests to which the gentleman refers and the micrometers which were used. I studied these tests at the time they were made and preserved the reports of them, having them now in my library, and know what they were. Some of the instruments are still preserved, if I am not mistaken, in the hands of Dr. E. A. Bogue, of New York, and I have caused a new cut to be made from the original, given in the report of the work of Drs. Hitchcock and Bogue to the New York Odontological Society in 1874.

The simple fact is that the effort of these gentlemen was a failure. They found shrinkage and expansion, it is true, and in a manner measured it, but did not learn the controlling factors of either shrinkage or expansion in amalgams. They did not learn that annealing an alloy, or aging it, had an effect upon shrinkage and expansion, or that any change in the qualities of an amalgam occurred after the ingot was cast or cut.

I have no wish to find fault with the work of these gentlemen. They were the pioneers in the effort to make accurate studies of the shrinkage and expansion of amalgams for dental purposes, and their work was of much more importance than the profession seem to have supposed. Yet as we now view this question, their measurements seem very crude and inaccurate. Their micrometers, while otherwise much alike, had different scales, so that it is troublesome to make an intelligent comparison of their results. Thus, while Dr. Hitchcock's micrometer was made with graduations of 1,000 to the inch, Dr. Bogue's had 3,600 graduations to the inch. The filling in

each case was one inch long. The scale of my micrometer is 10,000 to the inch. In the following I have reduced their measurements to my scale for comparison. In the measurement of the shrinkage of the amalgam made from the alloy—40 silver, 60 tin—Dr. Hitchcock found a shrinkage of 15 points, twelve of which occurred within the first half hour; Dr. Bogue in measuring the shrinkage of the same formula found a shrinkage of 3.6 points, two and four-tenths of which occurred within six minutes.

These gentlemen knew nothing of the influence of age of cut on shrinkage and did not state whether the alloy was fresh cut or not. In my own measurements of the same formula I find that if used fresh cut it will shrink from 3 to 4 points and then expand 7 or 8. If it is fully annealed it will first shrink 7 or 8 points and then expand 2 or 3 points. Neither of the gentlemen mentioned discovered this dual movement, though the scale markings of Dr. Bogue's instrument were fine enough to show it clearly if the working of the instrument had been sufficiently sensitive.

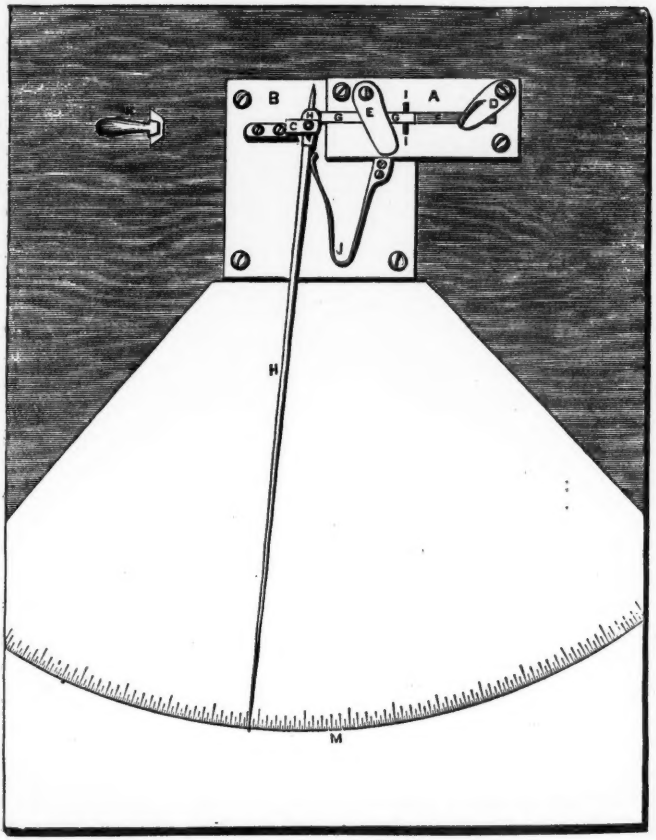
Again, in measuring the expansion of a precipitated palladium amalgam, Dr. Bogue used both his own and Dr. Hitchcock's instruments and obtained a reading in his own of an expansion of 7.2 points, and in Dr. Hitchcock's an expansion of 4.5 points. These discrepancies are much too wide to be harmonized.

As the micrometers these gentlemen used were arranged, the filling was packed into a trough or slot that formed a part of the machine, and the filling could not be removed and replaced, but had to remain in place until the end of the experiment. This rendered the work tedious in the extreme. The result was that but few measurements were made. Even if these had been accurate they were insufficient to serve to make out the *conditions* of the expansion and contraction of the amalgams.

Our English cousins across the water did no better; neither did Dr. Flagg, who made most of his experimental work later with all the advantages to be derived from the work of his predecessors.

Now before the editor of the *Western Dental Journal* makes any more assertions, it is incumbent on him to show that the controlling factors in shrinkage and expansion of amalgams, which have recently been published, had been made out before, and to give them from such published records.

Dr. Fletcher's so-called *experiments*, in regard to using an excess



DESCRIPTION OF DR. BOGUE'S INSTRUMENT FOR MEASURING THE CONTRACTION AND EXPANSION OF DENTAL AMALGAMS.

A is a steel plate with a groove running from near D, at the right, to the end of the plate at the left and being about one inch and three-quarters long. II, a slot exactly one inch from the right-hand end of the groove for the gate K to rest in while a filling F is being inserted. GG, a bar of polished steel sliding easily in the groove, one end of which rests against the filling F and the other against the circular part of the pointer H. Beneath this steel plate is another B, on which the pointer H is suspended at C, on two points like a compass needle, that it may move freely. J is a light spring pressing the upper end of the pointer against the bar G, so that it will follow up the filling F in case of contraction. E and D are slides to hold the filling and bar down in their places, so that no upward movement may be mistaken for a contraction. This apparatus is screwed to a mahogany board, and a paper scale arranged by means of microscope glasses, so that one degree of the scale at M equals one thirty-six hundredth of an inch at F.

of mercury and squeezing out versus dry mixes, consisted in distilling off the mercury in the two cases and showing that in those particular mixes there was more mercury retained in the wet mix, which in the cases in hand was probably correct. Another experiment, upon which he relied to show that the characters of the alloy were changed by squeezing out mercury, was made by distilling away the mercury squeezed out, in which he found that some metal had been carried out from the mix dissolved in the mercury. He did not make an analysis of this residue of metal to ascertain whether the mercury had dissolved the alloy as a whole, or whether some one metal had been dissolved in greater proportion than that in which it existed in the alloy. Now unless this latter proves to be the fact, the constituents of the alloy will not be changed by squeezing out mercury. No one has yet made this experiment in any way that is decisive, and until it is done no one can know about it.

I put this question to Dr. Fletcher in an article in the April, 1896, issue of the *Dental Practitioner*, and he answers in the next issue, saying, "My own experiments in this direction were not recorded," and then proceeds to tell how to do them, and demonstrates clearly that the experiments showed only that some metal was dissolved in the mercury, a fact admitted by all.

All I have said about the matter was that I did not know, but from close study of the qualities of the amalgam made by squeezing out, and not squeezing out, the difference in shrinkage was not especially apparent This is true when in the last mercury squeezed out there is enough of the metal dissolved in it to cause it to stiffen.

On the other hand Dr. Fletcher claims that from the experiments above recited, and from his observation of fillings made in glass tubes, the squeezing out of mercury does change the qualities of the alloy. When the character of the experiments is considered this cannot be regarded as anything more than an opinion; and as his instrumental observation has been with instruments far less accurate than my own, I prefer to be guided by mine until more accurate data are found.

The misrepresentation of such a subject as this is a wrong to the dental profession and to the people whom they serve, for the reason that it is calculated to prevent men from making use of the best means at their command for alleviation of diseases of the teeth they are called upon to treat. I have no fault to find with intelligent

conservatism in regard to new ideas that may be promulgated in regard to filling materials, or other matters pertaining to dentistry. It is right that men who write study such matters closely and then give the views derived from such study. But a reasonably full and careful study of them is a moral obligation to the profession for whom they write, before undertaking to champion any special view in regard to such matters.

CASE OF REPRODUCTION OF TISSUE.

By G. Lenox Curtis, M.D., New York. Read Before Vermont State Dental Society, March 16, 1898.

Patient, Mr. X, aged 55; Montreal, March 18, 1896. History of case referred to me by Dr. W. Geo. Beers and Dr. Craik, of Montreal. Twenty years ago patient contracted syphilis, for which he was apparently successfully treated. After this he was in robust health until seven years ago, when suddenly the left side of his face became badly swollen, and soon after a discharge of pus flowed from the nose and throat; his breath was extremely offensive and nauseating; throat sore with annoying cough which led to bronchitis, becoming chronic. From time to time, after a lapse of several months, the swelling in the face would recur, the discharge from the nose and offensive breath being constant; general discomfort and loss of vitality followed until January of 1896, when his condition became debilitated, although under the constant supervision of his physician, and he was referred to Dr. W. Geo. Beers to have some troublesome teeth extracted. The superior left incisors and cuspid were removed, being attached only to the gum. About this time his cough became exceedingly troublesome, his bronchial symptoms exaggerated, and general health bad. Dr. Beers detected dead bone in the jaw of considerable magnitude, to which he called the attention of Dr. Craik, Mr. X's family physician, and advised a consultation with me. Dr. Beers douched the wound daily for six weeks, during which time the patient's general health somewhat improved.

Examination took place March 18, 1896. I found cough harsh, expectoration profuse, appetite very poor, patient extremely debilitated, showing signs of long suffering and the effect of pus upon the system; exaggerated signs of pyæmia not present, yet sufficiently to show long suffering from blood poisoning. The left side of face was slightly swollen, which patient stated it had been for several

ration composed of carbolic acid, balsams of peru, tolu and benzoin, which was supplied by Dr. Henry Ievers, and found it to be of much value in retaining the dressing in place. The case was seen by me for three days in succession and redressed with the same preparation, the effect of which was very marked, as healthy granulation had set up under its influence on the third day, there being no pain or inflammation when I left the case in charge of Dr. Beers, who continued the same treatment; the wound rapidly healed, new tissue filling in except in a very small space between gum and nares, through which the probe could be passed, the bone having been very nicely reproduced.

On May 29, 1896, Mr. X came to my office in New York for correction of nasal stenosis; I took away a large spur from the left side of the septum, and removed most of the left inferior turbinate, also curetted and treated the opening in floor of nares, which healed kindly and completely closed. The patient was under treatment until June 9, when he returned to his home in good condition and applied to Dr. Beers for an artificial denture to restore the contour of the face and missing teeth. I have since learned that Mr. X is completely restored to health. This is another example of reproduction under certain treatment.

GINGIVITIS AND ITS RELATION TO CROWN WORK.

By S. B. Palmer, M.D.S., Syracuse, N. Y. Read Before Vermont State Dental Society, March 16, 1898.

Some months ago Dr. H. J. Goslee read a paper under the above heading before the Chicago Dental Society. I have selected this subject because the article sets forth the most concise observations, conditions and facts relating to gingivitis that have come to my notice. I quote another statement rather than give conditions and effects from my own knowledge. The principles involved in gingivitis are in the line of study (oral electricity) which I have pursued for thirty years. With few exceptions authority seems to class the outcome as a theory, without a scientific foundation. This, however, does not annoy; in fact, sufficient of the so-called theory has been incorporated in practice to give assurance that the profession has not been degraded by departure from established belief.

Earnestly I kindly invite scientific discussion upon the cause of gingivitis, which is the combination to unlock the so-called "electro-

years; there was a large opening in the floor of the nares, extending back to the soft palate, through which pus exuded and the rough necrosed bone could be readily detected. The area involved was from the base of the molar to the second bicuspid to the median line, and as far back as the soft palate, involving the entire bony structure. The odor from the breath was sickening, caused by the extensive discharge of pus from the gums and nose, the pus being black and thin in character, the first superior bicuspid black, dead and abscessed, the second bicuspid and third molar vital and in good condition, the first and second molars missing and with gums healed, the mucous membrane hypertrophied, congested and of purple hue; the color around third molar normal. The probe passed in the wound where the teeth had been extracted, passed back into the throat and on either side of the sequestrum; all the bone on this side of the jaw anterior to the second bicuspid was destroyed, although the walls of the antrum were not penetrated. The left nares was nearly closed, due to a deflection of the septum, with a large nasal spur, and pressure on the periosteum in the region of the inferior turbinate, with a well defined line of demarkation formed around the sequestrum.

Operation. The patient was given ether by Dr. J. G. McCarthy and I was assisted by Dr. Beers, Mr. X's physician being present. The dead bicuspid was extracted, a denuder passed between the dead and living bone to thoroughly free the periosteum; then with a heavy pair of forceps the sequestrum was firmly grasped, gradually loosened and removed; this was followed by a fierce gush of blood, fully one pint in all, the vessels having disgorged themselves in about a minute, when the entire surface of the wound was curetted, granulations and debris removed, the hemorrhage being checked by hot water, the wound was sterilized with hydrogen peroxid and firmly packed with iodoform gauze. Time of operation ten minutes; time between first inhalation of ether until patient was conscious, twenty minutes. Dr. Craik expressed himself as being highly gratified with the operation and thanked me for allowing him to see it, and said it was the cleanest operation he had ever seen on the jaw, and the only one without cutting through face. Patient made rapid recovery, no fever or untoward symptoms following operation.

The case was redressed on second day, and on Dr. Beers' strong recommendation I used for the first time "Pheno-Banum," a prepa-

The important point I wish to be remembered is this: In all the evolutions of matter up to man the laws and forces have also evolved, and act upon organic matter in the vegetable and animal kingdom upon the same principle that physical forces do on the mineral plane. That is, electricity, so to speak, is also organized or endowed with life, or becomes, as sometimes denominated, "animal current." Animal magnetism is not a new term, nor does it need evidences of its existence. Animal heat is also a fixed fact and is one of the best proofs of organization to meet the conditions. Animal heat ranges between freezing 32° and 100¾° above, when the organized dynamo burns out and vital energy ceases.

Before making an application of these organized forces please bear in mind that electricity and heat are close friends, helping each other in most of the work done by these forces. The effect of this union upon gum tissue is this: Gold in the mouth will not injure gum tissue by the temperature conducted by hot drinks or food, as all know who wear or have worn gold plates; but where gold is insulated from the membrane, except at a given point or points, there is added to heat a current of electricity which, with the heat, is discharged into the gums, etc.

Mention will be made of this fact farther on. Now let us introduce quotations from the article already mentioned. "It is certainly a lamentable fact to note the surprisingly small percentage of roots carrying crowns that are devoid of any evidence of periosteal inflammation, or that are surrounded by tissue presenting a normal or healthy appearance as compared with the very great percentage that invariably manifest more or less marked degrees of gingivitis."

On the face of the great amount of literature that has been given us upon this subject, and in view of the rapid strides of progress and advancement achieved in this line, it seems indeed a deplorable condition when one can conscientiously and candidly assert that only from 15 to 25 per cent would be a fair estimate of these roots which, after carrying crowns for a time, present no indications of this condition, and yet we are convinced by close observation that on an average such is the case. The question naturally arises then as to its probable cause.

Since a very great percentage of the crowns now in use are made of gold, or having gold bands, would it be just to attribute it to the assertion sometimes made that the tissues of the mouth take un-

chemical" theory. Either from lack of understanding the principles involved, or prejudice against the theory, the subject has not been scientifically discussed upon the plane where the phenomena appears. One might as well expect to raise stock on mineral food as to attempt to discover the true cause of gingivitis upon the physical plane or by physical experiments. Each dimension is under control of natural laws, adapted to the condition of the matter so controlled. With each evolution of matter the laws are adapted to and control the organized matter. The same force is an agent for all changes and evolution of matter from atoms to intellect. That force, with its interconvertible phases, is electricity, heat, light, magnetism and chemical affinity. By combination of these agents in creation matter united land, water, atmosphere, and the globe was the outcome.

From a plane above came "the breath of life." Vegetable and animal life appeared on land and in water, and through evolution the highest creation—man. In the human species are found a concentration of all the laws and principles which are required for propagation and support of man. The difficulty in understanding the writer's belief is the failure to trace the laws so well known and taught in physics, and to some extent upon the vegetable plane in organic chemistry up and into the animal plane.

I boldly make the statement that the above-mentioned forces are one and the same from minerals to mind. I will not go into metaphysics nor go beyond the point under discussion, but place myself on record by giving my convictions that some one in the not distant future will shock the school of physiology as severely as the new departure did dentistry twenty-one years ago.

An observer of nature and natural laws will recollect that the energies and forces mentioned have recorded the works of the Creator upon each plane according to the preparation and possibilities of matter to receive them. The mineral dimensions show beauty and form in crystals and flowers in frost work upon the window pane. The vegetable plane evidences life and instinct in plants and trees. Roots penetrate the soil for stability and moisture, reach out laterally toward a near-by stream, and in thicket strive to tower above their neighbor for sunlight. The animal kingdom embraces the highest creation, man, in whom is embodied all the required laws, principles and instincts found upon the planes below, with reason, will and intellect added.

kindly to that metal, when we will, perhaps, turn right around and advocate a gold plate to the next patients presenting themselves; when we know as an absolute certainty, vouchsafed to by proof and experience, that there is no substance, either metallic or mineral, that when brought into contact with the tissues of the mouth presents so many favorable points as gold. Yet for all that, in crown work we can but acknowledge the frequent presence of an unfavorable condition, but does it not seem very plausible that the fault lies not in the metal, but in its unnatural relation to the root and tissue by virtue of poor adaptation? Please bear this in mind; it will be answered farther on.

"It is an acknowledged fact that the tissues take very kindly to porcelain, and that a much greater proportion of crowns made of that material are worn with comfort and without the presence of inflammation and subsequent secession than are those made of gold; but it looks probable, and in fact seems evident to me, that that difference is due in the main to the fact that a porcelain crown, when adapted and in position, presents always this favorable condition: a perfectly smooth, vitrified, highly-polished surface, with a rounding edge. And as this is the most desirable and natural condition, why then would not the tissues take kindly to it and remain normal and healthy? When, unless there is irritation from an improperly prepared root, a poorly-fitted band, or impingment upon the membranes caused by driving the band on too far, there is absolutely nothing to prevent. We are impelled to maintain, without hesitancy, that this can be accomplished and the same results secured in the use of a gold crown if we will but take the time, pains and precaution to properly prepare our roots," etc. The remainder of the article describes how it may be done.

In all my reading I have not had such an opportunity to explain the cause of crown work disturbances as the above affords. The difference between gold plates and gold crowns, between porcelain and gold border crowns, the incompatibility of gold as a filling material for specific conditions of teeth, may all be answered under one head: The effect of gold crown upon gum tissue.

Early prejudices against the electro-chemical theory seem to have excluded it from our dental chemistry and, with few exceptions, from being taught in dental colleges. As many readers may not know the source from which the basal principles of my knowledge

has been obtained, I will repeat in substance what has several times been given in previous papers. In boyhood days fondness for the study of electro-chemistry by private study offered considerable information. In 1848 I commenced the study of dentistry, at the same time the wearing of a silver plate. Rubber was not then introduced. With that I commenced the study of oral electricity. During fifty years a number of plates of various materials have been worn, each giving experience that could not have been gained by any other means. This information is of not account except as it may benefit some young practitioner by knowing points regarding metals worn in the mouth which are not recorded. I will briefly mention the peculiarities of each in turn. In early times silver was used for temporary work, also when gold could not be afforded.

Silver in the mouth is a positive element, corresponding to the zinc element in a galvanic cell, consequently any food containing carbon, as toast, broiled meats, roasted peanuts, coffee, etc., produced an unpleasant metallic taste; sulphur in eggs, breathing smoke from gunpowder, or even passing a sulphur spring, in breathing through the mouth the taste would detect sulphur. Still another feature, gold clasps were often used on silver plates; destruction of the teeth soon followed. The clasps, being negative, became the positive plate from which the current went out to decompose the impacted food, and thus furnish acid to dissolve the enamel. A gold plate with an alleged silver clasp would be an improvement, or a silver plate with an alloy of silver and copper clasps would have been a great improvement. The silver plate was discarded for gold, which was a relief from the taste of a metal. With gold the current was reversed, the plate was negative, and not acted upon by food like carbon, sulphur, etc.

It was a galvanometer, however, to detect base metals or metallic compounds. Silver, iron, tin, lead, or liquids such as we often use in canned fruits, made it known. Thus the study became exceedingly interesting. Rubber came and was put to the test, and the result may surprise those who have not made the change. It is true patients could not describe, if they could realize, what an expert could detect. Rubber was an insulator, and here let me caution any young dentist against arguing that rubber plates do not injure taste. It may be true that the plate does not cover membranes of taste like the tongue, but the roof of the mouth has its office to perform on this

line. Insulation was most objectionable, and that means more than can be imagined.

Thermal changes during eating are of importance and natural. The portion covered by the rubber plate might as well be paralyzed as to be so covered. The smooth surface of a plate of any material is unnatural, but when no changes, electrical or caloric, are felt, taste is impaired, besides the abnormal condition of the surface covered, which I have not been able to correct by black rubber.

Please understand that I am not advocating disuse of rubber. If I were working at prosthetic dentistry I should use rubber according to circumstances. It does no material injury, but is annoying, as above stated, and I am giving the facts relative to each material.

Swaged aluminum plate, teeth mounted with rubber, was the next on trial, and at once overcame all objections. To say nothing of its light weight the metal seldom produces electro-chemical action by anything taken into the mouth. It occupies a neutral position, as compared with gold or silver. The latter is a positive element, and gives a metallic taste, as before stated, by carbon, sulphur, etc., while gold is a negative factor, and consequently it becomes a receiver of the electricity which is generated during mastication, and mingling of the positive and negative elements of food. Electricity is thus generated, as it would be in mixing elements in the laboratory. Without a metal in the mouth the electricity is what might be called organic, not polarized. It is the agent which adds delicacy to taste, also that which prompts natural selection of food to be eaten in pairs, as sweet and sour in lemonade, acid and alkali; soda-water, charged waters, roasted or broiled meats, roasted coffee, peanuts, etc., are negatives to saliva, and cause a natural current of animal electricity. This prepared food is taken into the stomach and the mysterious process of digestion completed, materialization of the elements, the waste product is cast off, the electric vital energy is stored up in the muscles. Excuse this digression from the oral cavity. The truth of this will some day revolutionize physiology and establish digestion upon an electrical basis.

Now we are ready to advance another declaration—That metal in the mouth converts organized electricity into physical electricity. The effect is this: when such an unnatural current is discharged at a given point, tissue or dentin is injured. Aluminum is almost free from potential thermal changes and electricity passes readily

through the plate without injury; so with gold when it rests upon membrane. This will be taken up again.

The next trial plate was of cast aluminum for experimental purposes. In order to cast aluminum I slightly alloyed, and my first experience in wearing the plate was interesting and amusing. The plate was a full upper, except the second molar on each side. To increase the bite and to prevent the molars from elongating, a cap of the metal covered the coronal surface. The case articulated with a bridge on each side below. The plate was inserted in the afternoon; nothing remarkable was noticed except the metallic taste thought to be due to finish, etc. In the evening I went upon the street, and to my surprise all the street lights in sight flashed and were unsteady. As all were affected alike I concluded the cause was at the central station. It was not many minutes before I could produce the flickering at will by closing my teeth. On opening the jaws enough to give space the lights were steady. By involuntary action the electric shock affected the optic nerve and produced the effect. The gold became charged and on contact discharged and gave a shock. Burring out the metal and filling in with vulcanite corrected the trouble; but the cast metal was discarded for a rolled and swaged plate, which to me or for me is the most comfortable plate I have worn, and in fact it has very few objections.

To be fair with the cast metal I will say for a single plate, where there would be no gold opposite, the alloy would probably not be objectionable. In my own case, with a large surface of crowns below, and the tongue connecting the two metals, a metallic taste was ever present.

Now let us return to the subject of gingivitis. The cause of gold-crown disturbances has been well defined in the effects of gold upon tissue. We will recapitulate. Gold in the mouth becomes charged with electricity when the metal rests upon gum tissue, like a plate; no harm is done when only small portions rests upon the gums or under the gums. That portion receives the amount of heat and electricity that is received upon the whole surface. I know from experience that hot water alone produces severe pain on the sensitive dentin below the gum line. That coffee increases the current from the effects of the carbon in the coffee acting upon the saliva. I find that bridges are worse than single crowns, having more gold

surface to gather the electricity. Bear in mind that in physics intense heat can be produced by electricity. In animal life the range is between freezing and the organic life a degree above. Cataphoresis teaches that intense currents destroy gum tissue; feeble currents, for a long period, produce like effects on organized bodies. It is a natural law that gold terminating in a band under the gum causes an abnormal condition, as seen in connection with crown work. Perfection in fitting cannot set this law aside. As a remedy for sensitiveness of dentin silver nitrate is the most effectual I have used. Sheeting the band, so as not to extend beneath the gum, is usually a remedy for inflammation.

TREATMENT OF CARIOUS APPROXIMAL SURFACES IN BICUSPIDS AND MOLARS.

SYMPOSIUM PRESENTED BY DR. F. S. BELYEA, BROOKLINE, MASS., BEFORE THE NORTHEASTERN DENTAL ASSOCIATION, OCT. 20-21, 1897.

Dr. Belyea had sent the following questions to the dentists whose replies follow: (*a*) How would you treat carious approximal surfaces on bicuspids and molars? (*b*) How shape the cavities? Would you conserve or sacrifice tooth-substance, and to what extent? (*c*) What materials would you use in filling? (*d*) Would you use a matrix; if so, what kind? If not, state your objection.

Dr. Chas. L. Johnson, Pittsfield. (*a*) If the carious surfaces were very sensitive, or the dentin soft, I would adjust the rubber-dam, dry to a reasonable degree with hot air, remove the decay and fill with a mixture of oxyphosphate two-thirds, and hydronaphthol one-third, for six months or so. If the tooth was reasonably hard and not too sensitive, I would insert a permanent filling without further treatment. (*b*) I would make the cavity occlusal as well as mesial or distal; would cut the vertical walls back to such a position that the juncture of the filling and enamel edges would be kept clean by the natural motion of the tongue and cheeks; would cut the cervical wall down to such a position that the juncture of filling and enamel would be overlapped by the gum. (*c*) I believe the most permanent and best filling to be made by using tin and gold for a cervical border; if the cavity is very deep, would put in a capping of oxyphosphate two-thirds, and hydronaphthol one-third, completing the filling with gold foil, contoured to as near the natu-

ral shape of the tooth as possible. (*d*) I believe in the use of a matrix, and like the double screw matrix designed by Dr. W. A. Woodward.

Dr. William Barker. (*a*) The age and sex of the patient, as well as the character of the teeth—*i. e.*, whether soft, deficient in mineral constituents, hard and dense, or friable and brittle—would all be factors to be considered in determining the treatment of the cavities under consideration. Speaking generally and briefly, in such cavities in the mouths of patients under twenty-two or twenty-three years, unless teeth of the first class with a good inheritance behind them, or in small cavities, alloys containing some copper, gutta-perchas and zinc phosphates would be employed. Very little gold should be employed in these cases, the expectation being entertained that at the age above indicated the teeth would have become sufficiently organized to wisely admit gold to replace the other. (*b*) A hard question to answer intelligently on paper without the use of diagrams. Where zinc phosphates are employed or gutta-perchas (under which a good antiseptic and adhesive varnish should be used) tooth-structures should be sacrificed very sparingly. When metallic fillings are demanded, cavities should be so shaped as to mechanically retain the filling without the use of "potleg" retaining points, dovetailing in briefest term. Margins should be cut back to form strong ground, and contour be as fully restored as possible. (*c*) As stated in answer to (*a*), any material best calculated to preserve the tooth. No one material meets all requirements, and so far as I know there is no class of filling-materials which, intelligently employed, may not be useful in preserving teeth. (*d*) Where I had ample room I would not employ the matrix; the percentage of such cases is not large. I prefer a band matrix as a rule. I make them myself: a simple strip of metal, copper, silver-plated on one side, cut to proper width and long enough to embrace the tooth inside of the two holes, one at each end. Through these holes a small bolt or screw is passed, and with a nut on one end the band may be made to embrace the tooth as tightly as desirable.

Dr. Geo. C. Ainsworth. You know my methods so well that I deem it unnecessary to go into detail. The article of Dr. C. N. Johnson on cavity formation is well written and worthy of careful attention. I might differ with him slightly in discussions, but not much. As for filling, soft gold or tin and gold at the cervical wall,

then the major part of the filling soft-working cylinders, annealed, to be inserted by hand-pressure and finished with cohesive gold and the mallet. I have used lately, in place of the latter, Dr. DeTrey's solila gold, completing the whole filling with hand-pressure, with much satisfaction, but I do not have, as yet, perfect confidence. If this latter stands as well as it looks it will be a great addition to both operator's and patient's comfort, doing away almost entirely with the malletting so trying in many cases.

Dr. J. W. Rider, Danbury, Conn. (*a*) I should separate thoroughly for filling. (*b*) I am conservative in my treatment of tooth-substance, removing, of course, all defective enamel, but do not believe in sacrificing, providing always that firm and well-supported margins can be gotten. A mere opinion is, as a rule, unsatisfactory. My reason is that with the original point of decay removed and replaced with a well-contoured filling, *i. e.*, a filling compatible with normal shape and condition of the tooth, the danger of a future attack is not sufficient in at least ninety per cent of cases to warrant sacrificing unnecessarily any sound tooth-substance; certainly not in the promiscuous robbery advised by some at the present time, mistaking I think the advice given by Dr. G. V. Black. (*c*) Should be that material that in the judgment of the operator would prove the best conservator. I should use gold wherever the conditions warrant it, next to gold, amalgam, etc. (*d*) The matrix, in my opinion, is universally a "delusion and a snare." In the hands of the incompetent and careless operator it is certainly a vile and treacherous contrivance, while to the competent it is practically useless.

Dr. J. G. W. Werner, Boston. (*a*) Always restore carious approximal surfaces in molars and bicuspids to full, or, in many cases better yet, to a little more than full contour. (*b*) Flat base, cervical wall beveled, lingual and buccal walls beveled with little or no undercut or grooves, an anchorage step, and in all but the best teeth rather sacrifice than conserve tooth-substance. (*c*) Would use gold—soft gold at the neck and all but the last or occluding portion, where I would use gold and platinum and in some cases gold and tin at the cervix. (*d*) Would use a steel matrix.

Dr. R. Ottolengui, New York. The subject of your symposium is one upon which a book might be written; and as I cannot take the time to write a book, and as your society would probably not be

gratified at receiving so lengthy a communication, I shall say only that in the treatment of cavities in the approximal surfaces of bicuspids and molars I would follow the same rules that I do in similar cavities of any of the other teeth. I get the teeth into a healthy condition and fill them with gold, restoring the contour, and so shape the fillings that no food may be lodged between and there retained. For these fillings I use cohesive gold, at least the latter half of the cavity being filled with heavy foil introduced by the electric mallet or engine mallet.

Dr. G. A. Bowers, Nashua, N. H. I shall include only the upper bicuspids in my reply. A similar treatment, however, answers for the lower bicuspids and all molars. The upper bicuspids are the most vulnerable teeth of the permanent denture. I fancy seventy-five per cent of the operative procedures are performed on these teeth. Owing to faulty manipulative skill or a lack of conscientious treatment early in life on the part of the dentist, they are either sacrificed or covered with a crown, and generally a gold crown. Frequent examinations, conservative treatment, and conscientious work must be the rule from their eruption. If they are early prone to decay they should be filled with cement or gutta-percha. Watch them closely, renewing the fillings if necessary until the patient is about twenty. At this age if they are of good structure they can be permanently filled, and in doing this an opportunity is afforded the dentist of exhibiting his most artistic skill. When a bicuspid is artistically filled, bringing out the beautiful lines and contour, it is a sure criterion of a good dentist. (*b*) In the cavity preparation use the chisel freely, never hesitating at sacrificing tooth-structure to accomplish your desired result. Extend the cavity cervically, and beveling so that the gum will come down over the finished filling. The seat of the cavity should be practically flat, with the buccal and palatal grooves extending and rounding into it. A wedge-shaped retention is supplemented in the sulci. Finally, see that your margins are well defined and sharp. A good chisel will do this. Do not use strips or disks, for you will invariably get a rounded edge, and therefore a slivering of the gold at that point. (*c*) I should always use gold if I could get my pay for it. (*d*) I think it is perfectly safe and a good practice to use a matrix. I almost always, however, fill the cervix, first burnishing and finishing it. Then apply the matrix and complete the filling. I use

Woodward's matrices more than any other, numbers 6, 7, and 8. For special cases where these are not suitable I cut them out of matrix metal and contour them. They can be kept in position with a clamp or orange wood.

Dr. C. N. Johnson, Chicago. (*a*) and (*b*) are given in some detail in a recent paper read by me before the Kansas State Dental Society and published in the May issue of the *Western Dental Journal.* They got some of the cuts upside down, and to rectify this the DENTAL DIGEST is reprinting it in the July issue. I should esteem it a favor if you would examine this article and have the subject discussed before your society. The illustrations emphasize concisely the ideas advanced in the paper. (*c*) My preference is for gold wherever it can be used. Other materials are simply used as expedients and with a full sense of their limitations. If they last well it is exceptional and due to the exceptional causes. (*d*) I would ordinarily use a matrix on distal cavities. Use a thin matrix sufficiently yielding to be readily sprung away from the cavity margins so as to admit of carrying the gold between the enamel margin and the matrix.

Dr. Henry A. Baker, Boston. (*a*) In the deciduous teeth I would make a broad V with a corundum wheel, grinding back one-third upon molar crowns with the point of contact near the gum. If any cavity should exist after this treatment, I would fill with amalgam or gutta-percha, using a flat surface flush with the V; this makes them self-cleansing. Permanent teeth I would treat quite differently; I would restore them with contour fillings. (*b*) First I would get good separation, then shape the cavities with a rounded periphery nearly or quite to the gum. Approximo-lingually and approximo-buccally I would sacrifice tooth-substance to the extent that the above surfaces could not come in contact to within one sixteenth of an inch after filling. In second quality teeth or young subjects I would fill three-fourths full with tin, then using No. 30 rolled gold, finishing the surface with platinum or rolled gold well malletted and burnished, being careful to have the platinum and gold in layers one upon the other like leaves of a book, thus preventing pitting. The fillings should be well rounded, approximating each other like two curved surfaces with point of contact as we find it in nature, with a good space at the gum to make them self-cleansing. (*c*) For first quality of teeth would use non-cohesive

gold in place of tin, and then proceed as above. (*d*) Would use a steel matrix held in place by Perry separator and wooden wedges. For teeth standing alone would use a steel loop matrix.

Dr. William H. Carpenter, Providence. (*a*) The shaping of cavities much depends upon the amount of material at hand, as we all well know. I do not believe in sacrificing tooth-structure to prevent margins from touching, for this can be prevented by obtaining a little extra space and then bulging the filling sufficiently to hold the margins away from each other. I believe that no flat surfaces should exist, but in all cases the surfaces should represent segments of two circles. The cavity should contain no grooves or pits if it is possible to prevent them, and it is in most cases. The matrix should be kept in place until the last piece of gold has been introduced. (*b* and *c*) Presuming that the teeth in question are suitable for restoration by filling, I should use for that restoration gold contour work with the aid of matrix, and that in every instance. I fully believe that a good operator can get the best results (those most resembling nature and hence nearest to perfection) with soft gold cylinders at the cervical wall and two-thirds the way up toward the grinding surface, continuing toward the top with semi-cohesive and finishing with cohesive gold, or, where the surface receives too much attrition, with gold and platinum (rolled), No. 60. In cases of very poor tooth-structure I sometimes use at the cervical wall a few pieces of gold and tin, No. 3, folded together and lightly rolled into cylinders. (*d*) In all cases the matrix must be used. It simplifies matters, and produces, I think, the only perfect filling. The matrix may be of any kind the operator prefers, provided it is of steel. I use cold rolled steel very thin, and shape and fit one to suit each case, holding it with either gutta-percha, cement, separator, or whatever I think best suited to gain the end desired—viz., a nice gold contour needing but little finishing on the approximal surface, most of which can be effected with the burnisher.

Dr. Sidney S. Stowell, Pittsfield, Mass. The treatment of carious cavities in approximal surfaces of bicuspids and molars is subject to so many modifying conditions that no fixed rule applying to all cases can be followed. Some cardinal principles should be observed—first and greatest in importance is: The object in filling teeth is, or should be, to preserve them, not to display our skill as dental jewelers or to enrich ourselves at our patient's expense.

Therefore, if the patient is young, or the tooth is soft, or the cavity deep, the excavating should be carefully done around the margins, leaving plenty of the leathery decay as a natural capping and permanent protection to the pulp, with the assurance that kind old Dame Nature will recalcify much tooth-structure which has been softened by decay if assisted a little and given a chance by protecting the parts with an antiseptic cement made by incorporating one-quarter by bulk of hydronapthol powder with the oxid of zinc of our common oxyphosphate cement, first having bathed the cavity with 25 per cent alcoholic solution of hydronapthol and drying it out. A greater percentage of bicuspids are found missing or with devitalized pulps than any other teeth, as a result of delayed or unwise treatment. Therefore conservatism in their treatment cannot be too strongly urged. Allowing that the tooth is in condition for permanent filling, the cavity should be so shaped as to bring buccal and palatal margins well out from between and away from possible contact with adjoining teeth, that the margins may be automatically or self-cleansed; cervical margin should be cut to or below the gum line—masticating margin cut through the fissure, forming a dovetail anchorage for filling, which should be compound. Cervix or floor should be cut flat or slightly beveled outward and grooved for anchorage; perpendicular walls should be grooved sufficiently to retain the filling; cervix should be filled with tin and gold foil, No. 4 gold and No. 4 tin folded once together; use matrix in every case, placing it loosely at cervix at first to allow the tin and gold to swell out over margin, filling that part more than full that it may after be burnished and finished back to exact flush. The bulky portion of cavity may be filled with soft or semi-cohesive gold, or if on distal surface with tin and gold. Complete the filling with cohesive gold, contouring to nature and burnishing and polishing to perfection.

RUBBER DEALERS COMBINE.—Consolidation of three biggest concerns in the country. Akron, O., April 17. Negotiations to consolidate the Goodrich of Akron, Goodyear of Connecticut and Butler of New Jersey, the three leading hard rubber companies of the country, have been closed.

STRYCHNIN IN CHLOROFORM POISONING.—In a desperate case of voluntary poisoning with chloroform, after the failure of all other means, the patient was restored by injecting, several times, about three centigrams of strychnin, seconded by artificial respiration and electricity. No deleterious effects were noted.—*Semaine Med., Dec. 15.*

Digests.

SULPHO-CYANID OF POTASSIUM IN SALIVA. By H. L. Albert. Read before Odontological Society of Great Britain. The methods hitherto employed in the quantitative analysis of the sulpho-cyanid of potassium in saliva are extremely laborious. With the help of Dr. Buckmaster I have devised an apparatus by which its amount can be estimated with the greatest ease in a few minutes. I hope it may help unveil the mystery of the origin, physiological and pathological significance of this characteristic salivary salt.

I will give a brief *resume* of the little that is known about it: Treviranus was the first, in 1814, to notice the deep red color produced by the neutral ferric perchlorid when mixed with saliva. In 1826 Tiedemann and Gmelin proved that the color was due to the formation of the iron sulpho-cyanid.—Jacubowitsch says it exists in mixed saliva in the proportion of .006 per cent, Frerichs in the proportion of .01, Lehmann in the proportion of .0064 to .009, while Wright states it to be as high as .51 to .98 per cent; the latter observer was, however, faulty in his method of analysis.—Its amount is said to vary in the secretions of the individual glands; thus in the parotid of man Mitscherlisch and Oehl state it to be .03 per cent. Maly found traces of it in the submaxillary, and Longet discovered a little only in the sublingual.—Oehl attempted a colorimetric estimation with solutions of iron.—Mitscherlisch, Jacubowitsch and Gmelin found it in the parotid of man, dog, horse and sheep, though Lehmann states that it does not exist in that of the horse.—Schiff says it is a decomposition product, and that by keeping saliva for from twenty minutes to half an hour the iron reaction is better seen. I think from my own observation I can dispute this.—According to Munk and Gscheidlen the salt is constantly found in urine. Musso found it in milk, and Leared in the blood. Munk and Gscheidlen found it in the urine of man, horse, dog, cat and rabbit. It is believed by these observers that the salt is absorbed into the blood and constantly removed by the kidneys, since it has not been discovered in the fæces. In urine, however, it exists only in very small quantities, the amount being from .059 gram to .08 gram in 1,000 cc.—Sheridan Lea says it occurs only in the

urine of those animals who excrete their nitrogen chiefly in the form of urea.—Heidenhain and Gscheidlen cut the ducts of all the salivary glands in dogs and formed salivary fistulæ. A total absence of the salt was found in the blood and urine, while the mixed saliva collected from the ducts contained it.—Carpenter, on the authority of Harley and Longet, says that the salt is absent in the herbivora.—Claude Bernard considers its presence to be due to carious teeth and tobacco smoking.—Lauder Brunton states that in the mollusca it diminishes reflex actions and quickens the heart beats, large doses arresting the heart in diastole.—Mons. Chouppé, experimenting on plants, found saliva fatal to vegetable life and attributed this to the contained sulpho-cyanid; and Hugenschmidt states it to have a distinctly bactericidal property.—Frerichs, Wöhler and others consider it to be non-poisonous in moderate doses. Dr. Florain in 1889 said though fatal to vegetable life it had no action on animals except in excessive doses.

I have tried the ingestion of pure potassium sulpho-cyanid in four rabbits, the amount used being between one and two grams mixed with about ten of bran a day. In every case death resulted in about a week. The symptoms produced were alike, viz., emaciation and loss of hair. In two a marked atrophy of the salivary glands was found, and in one of these, after dipping in a solution of ferric perchlorid, a microscopic examination was made, the ducts being found more deeply stained than the gland tissue. In all four large quantities were found in the urine and fæces, in fact the drug seemed to permeate, so far as one was able to judge, every organ and tissue, and to find its way in every secretion and excretion, even to the cerebro-spinal fluid. The emaciation was the most marked feature, bearing as it does on the statement of Dr. Fenwick, that the elimination—if it be an elimination—of the sulpho-cyanid by the salivary glands is a measure of nutrition occurring in largest quantities in the saliva of those who are well nourished and *vice versa*. I can from the observation of some few cases confirm this. I should say the emaciation in the rabbits was undoubtedly dependent on ingestion of drug, the normal quantity of bran being eaten.

Of the pathological significance Dr. Fenwick, in some lectures on functional diseases of the liver quoted in the *Lancet* of 1887, points out that those diseases where nutritive efforts are called forth are invariably accompanied by an increase of sulpho-cyanid, and further

states that for its appearance in the saliva the bile must enter the duodenum. He adds that as the two are so closely associated it is obvious that the salt owes its origin to some action of the hepatic cells. Dr. Fenwick's means of analysis consisted roughly of a series of shades of color produced by the admixture of a known quantity of the tincture of the perchlorid of iron in graduated solutions of the salt, the normal color being obtained by a comparison of the saliva of those whose appearance and history seemed to indicate a normal condition of health. The objections to this method are that the standards of comparison, being fluid, faded after a few weeks; and the tincture of iron, probably owing to the evaporation of the spirit, did not remain at a uniform strength. Dr. Fenwick made no attempt at a quantitative estimate.

Assuming it possible to construct some permanent means of measuring the amount of salt in saliva, it was obviously necessary to avoid these sources of fallacy; hence comparison with colored fluids was discarded. On the suggestion of Dr. Buckmaster it was thought likely we could adapt Oliver's hæmoglobinometer to our purpose. This instrument, the outcome of much labor and thought, is a means whereby the quantity of hæmoglobin is found by contrasting solutions of blood with graded red glasses, each of which corresponds to a known percentage of hæmoglobin. Resolving then to use unfading colored glass instead of fading colored fluid as a means of comparison, it was necessary at starting to try the tests for the salt, in order to ascertain which was simplest and which gave the best color. These tests are: (1) The perchlorid, discovered by Treviranus, consisting of the production of a blood-red color on the addition of ferric perchlorid, not discharged by hydrochloric acid, but disappearing on the addition of corrosive sublimate, thus differing on the one hand from the acetates and formates, and on the other from the meconates. (2) Böttger's test, discovered in 1872. Filter paper, soaked in tincture of guaiacum, dried and drawn through a 1 in 2,000 solution of copper sulphate, becomes blue when treated with saliva containing potassium sulpho-cyanid. (3) Solera's, based on the power of saliva of reducing iodic acid. When a weak solution of potassium sulpho-cyanid is mixed with iodic acid it becomes yellow, owing to the liberation of iodin. The test is rendered more sensitive if starch paste is used, the blue coloration produced by the iodin being more easy to recognize than

the delicate tints of the yellow. Solera claims such delicacy for it that he can detect .000004 gram.

Of these three tests the guaiacum was discarded, it being found necessary to make fresh preparations of that drug so frequently. The perchlorid test was chosen on account of its simplicity and sensitiveness, it being at least as delicate as Solera's. I decided then to use the red color of the iron reaction, and the next stage in the experiment was to obtain a color with a solution of the sulpho-cyanid of the same strength in which it occurs in normal saliva. This normal amount was based on the mean of Frerich's estimate of from .01 to .006 per cent.

To a .008 solution of sulpho-cyanid, therefore, liquor ferri perchlorid was added and sent to Lovibond's Color Laboratories in order to have the color reproduced in glass. In due course they were returned and the colors were found to be entirely matched. It was at once obvious that by a series of graduated red glasses of the same shade as known strengths of sulpho-cyanid solutions to which iron had been added, it would be possible to easily read off the percentage quantity of the salt in different salivas. It was only in the details of the experiments that any difficulties arose; of these the most serious was overcome by my colleague, Dr. Slater. Potassium sulpho-cyanid being so extremely hygroscopic it was found impossible to make up an accurate solution in the ordinary way. Dr. Slater kindly made one by a titration process, so accurate as to come almost within Frerich's variations of the normal. The solution was subsequently tested by Dr. Gardner and found practically correct, the exact strength being .010228 per cent. Not caring to trust to either the tincture of iron or the strong liquor, some trials were made with solutions of the neutral perchlorid in order to ascertain the amount necessary to produce the best color when mixed with the normal solution of the sulpho-cyanid. Some difficulty in weighing the iron occurred owing to its extreme deliquescence. After many trials a 50 per cent solution suited our purpose best.

Before proceeding further I would like to give a short account of the principle upon which the measurement is based. The color metric system is used in various ways as a means of quantitative estimation with the aid of color. Lovibond, the inventor, has fixed an arbitrary and equivalent unit in glass tinted in the three primary colors, the equivalence of the unit being established by the fact that

when the corresponding units of the three primary colors are superposed the color of each is destroyed, a neutral tint resulting. It is most interesting to note the total abolition of color produced by the superposition of even the lightest shades of the dominant colors. The latter are subdivided into shades and arbitrarily numbered in series, the shade of any color corresponding to the number of the shade of the other two colors. There are necessarily more light shades than dark ones, the human retina only being able to see minute distinctions of color in light shades. For matching and testing experts are employed.

The chart is a diagrammatic representation of the colors of known solutions of given quantities of sulpho-cyanid, to which a fixed amount of a 50 per cent solution of neutral ferric perchlorid has been added. It is called the "specific color curve." The numbers below the base line are the percentage amounts of sulpho-cyanid sent for examination, while those on the left correspond to Lovibond's own standard of color. The curve itself is formed by a line uniting the points where the colors of Lovibond's units cross the lines of the sulpho-cyanid solutions. It will be seen, on looking at the chart, that in the weaker solutions of the salt yellow only is discernible, in the medium solutions orange enters into its composition, while in the strong mixtures red only is present, the orange and yellow of the weaker solutions being totally disguised. The small numbers on the colored lines indicate the numbers of the colored units entering into their composition.

Having thus an unvarying and fixed means of quantitative examination at our disposal, it only remains to construct a graduated series of shades of red corresponding to the varying percentage of the salt in saliva, as evidenced by the depth of color produced by the iron reaction, and to make the method of examination itself unvarying. This gave rise to some difficulty for the following reasons: (1) Saliva, until it has been standing some time, has a decided color of its own. Obviously if it were to be compared with colored glass representing known strengths of sulpho-cyanid, its own inherent tint must be abolished or else that tint must be added to the red of the sulpho-cyanid. Its air bubbles and viscidity, too, were at first a disadvantage to quick work. (2) Given a clear, watery saliva it was necessary to use for each examination the same amount. (3) To be perfectly uniform, it was of course necessary to use an unva-

rying light, the changing tones of a London atmosphere being useless. (4) It was necessary to determine the gradations of the scale to be used. (5) It was necessary to fix the amount of the 50 per cent iron solution to be used; and (6) To construct a convenient cell to hold the saliva.

(1) The viscidity of the saliva was easily overcome and its color and air bubbles destroyed by the addition of glacial acetic acid. Saliva thus treated yielded the same reaction with iron as saliva to which no acid had been added. The proportion of acid employed is 1 in 3. (2) It was obviously a matter of indifference what quantity of saliva was examined, so long as the same amount was used for each examination. We decided on 2 cc. of the mixed acid and saliva. (3) The light difficulty was overcome by adopting Oliver's practical suggestion of using double transmission. It was found, as stated also by Oliver, that reflected light showed a deeper color than singly transmitted light. That of an ordinary candle was employed, the reflecting surface being placed under the cell holding the saliva. (4) The scale was made to consist of intervals corresponding to an increase or decrease of .0025 per cent, with the exception of the two lowest shades. Of these one corresponds to a mixture of distilled water and glacial acetic acid in the proportion of 1 in 3, to which .045 cc. of the iron solution is added. This was of course necessary in order to be able to detect the entire absence of the salt. The other low shade was put in the scale to enable us to detect a mere trace, and corresponds to a .0001 per cent solution of the sulpho-cyanid. The scale will thus tell three degrees of increase, the normal, four degrees of decrease and the entire absence of the salt, the readings being, in order, zero, .0025, .005, .0075, .001, or normal, .0125, .0150 and .0175 per cent. Besides these definite gradations, quarter, half, and three-quarter shades of the intervals were prepared. (5) The amount of the 50 per cent solution of the neutral ferric perchlorid necessary for each examination is only .045 cc. The quantity used is more than a hundred times as much as is necessary to combine with the maximal quantity of the salt that is ever met with in saliva. (6) A cell was made to hold 2 cc. It was constructed of black vulcanite, the color used not imparting any additional tinge to the contained fluid, and the acetic acid having no chemical action on it. In consequence of using reflected light it had to be placed on an opaque base, one of an absolutely colorless

nature. The hydrated sulphate of lime, used by Lovibond for this purpose, was employed. The cell and lime were then cemented on to an oblong piece of glass to make it convenient for handling.

Having thus made the requisite color standards and settled all the details, it was only necessary to send the former to Lovibond's Color Laboratories to have the colors matched in glass. They were reproduced so perfectly accurately that no trained eye even could detect the slightest difference. The glasses are mounted in series in a convenient form for handling. The colors of the quarter, half and three-quarter shades were also made. They are, however, only approximately correct, as curiously enough, though the intervals in the strength of the sulpho-cyanid are practically uniform, it was found that the color of the fractions of each did not quite correspond. I think, however, they are near enough for all practical purposes. Perfect accuracy could be obtained by having specially prepared glasses made for each interval, but as it would add to the cumbersomeness of the apparatus—a consideration where clinical investigation is aimed at—and also greatly increase the expense, it was not thought worth while to do this. The glasses corresponding to the fractions are called riders. The complete apparatus consists of: (*a*) test tube, fitted to economize space, over (*b*) centimetre measure; (*c*) scale of colors; (*d*) cell; (*e*) cover glasses; (*f*) pipette for measuring the iron; (*g*) camera tube for contrasting the colors; (*h*) riders. For clinical work they are packed in a small case, in which room is found for the candles. Besides these, for laboratory work it is as well to have a metal camera tube on a stand. I have had a miniature darkroom made and painted black, to exclude all light but that of the candle placed within it. At the lower aperture of the camera two holes are perforated, under one of which is placed the saliva to be examined and under the other the color standard with which it is to be contrasted. To one side of the upper aperture a piece of green glass is attached for the purpose of rendering the retina more sensitive to red light should the eye become fatigued.

The method of using the instrument: Some saliva is first collected in a test tube and 2 cc. poured into the centimetre measure. By this little manœuvre the air bubbles are retained in the test tube. To this 1 cc. of glacial acetic acid is added and shaken a little to insure complete mixing. Next the .045 cc. of iron is taken up and mixed with the acid and saliva, it being necessary to pass them two

or three times up the tube of the pipette to make certain all the iron is added. The cell is then filled from the centimetre and a cover glass—which by the way is absolutely colorless—placed on top. If the cell is accurately filled to 2 cc. a small air bubble will be seen on the surface of the fluid. It is then placed under one hole of the camera and the standard with which it apparently corresponds placed under the other. The candle is then lit and placed in such a position as to equally illuminate the surfaces of both saliva and standard. If the two colors correspond the amount of the sulpho-cyanid is at once known. If they do not, it is necessary only to shift the standards till one is found of the same shade. Should none be found to exactly match, the riders are brought into use, taking care that for every rider employed an additional cover glass be placed on the cell in order to equalize the reflecting surfaces.

Of what use the instrument may be remains to be seen. I have worked with it enough to be unable to confirm Schiff's statement that the sulpho-cyanid increases in saliva kept a few hours, owing to decomposition of the fluid. I can also say its existence does not in any way depend either on the presence of carious teeth or on the use or non-use of tobacco.—*Brit. Jour. Dent. Sc., March, 1898.*

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ELECTRO-DEPOSITION OF METALS. By Dr. L. B. Wilson, Cumberland, Md. Read before New Jersey State Dental Society, July, 1897. Having paid great attention to the subject of electro-deposition, I have met with many difficulties which careful experiment and perseverance have overcome. A form of battery which I have found most constant and certain in its action I will describe further on. The electricity generates in a cell, passes from the zinc to the carbon element of the battery, and from thence it proceeds along the wire issuing from the carbon, traverses the solution and returns to the cell through the wire which is attached to the zinc element, and so on. The zinc is the positive and the carbon the negative element, but the end of the wire attached to the zinc becomes the negative pole, whilst that proceeding from the carbon becomes the positive pole. The anode or positive pole is that wire which is attached to the carbon, and to this wire or pole is suspended in close contact the sheet or plate of metal which is destined to resupply the solution with the amount of metal which it loses by the deposition which takes place on the cathode or mould to be coated.

The cathode or negative pole is the wire which issues from the zinc, and it is this wire or pole which receives the deposit in the bath.

The battery which I recommend consists of a stone jar holding about one gallon or more. Fill this jar with hot distilled water, add to this two ounces of bichromate of potash, one ounce of bisulphate of mercury and two ounces of sulfuric acid. The bisulphate of mercury will keep the zinc well amalgamated and prevent local action. The carbon is placed in this solution and the zinc only when in use.

Preparation of Moulds.—Take a plaster impression (in case the tooth or teeth have cavities before taking impression, fill and contour the cavities with wax), dry plaster impression, then pour in the following fusible metal: one-half lead and one-half tin. Just before it sets, stick a good-sized copper wire in molten metal, remove mould, and in all parts on which you do not desire the deposition to take place: (1) For copper solution, with your wax spatula cover the surface with melted wax. (2) For gold solution, cover all parts on which you do not want the deposit to take place, either with gutta-percha or rubber, dissolved in chloroform; the cyanid of potassium in the gold solution will dissolve wax.

Electro-Deposition of Gold.—The solution of gold should be generally worked hot. I have observed that a bath containing five or six dwts. of gold to the quart of water, and the necessary proportion of cyanid, and worked with the battery above described, has required a much larger surface of anode to be exposed, to a given surface of negative electrode, than would be required to plate in a solution containing one and one-half dwts. to the quart of solution, hence I infer that the latter solution is the better conductor of the two.

Gold Crown Made by Plating.—The fusible metal crown or bridge to be plated must be clean, attached to the zinc pole of the battery and immersed in the solution, which should be kept hot while the deposition is going on. It is of the greatest importance to let the anode nearly come in contact with the solution in starting. The work should be kept in the solution until it receives the proper thickness of deposit, which will be aided by occasionally removing the work, and after cleaning and scratchbrushing, reimmersing it. It is also necessary in order to get a bright deposit, to keep the work moving in the solution.

The solution is easily made by connecting the battery to two gold plates and suspending them in a strong solution of cyanid of potas-

sium until the one attached to the zinc plate of the battery receives a deposit. This can then be taken out and the solution is ready for use; the other remaining in is gradually dissolved and keeps uniform the amount of gold in solution. When the deposit is as thick as desired, the crown is removed then and held over a Bunsen burner. The fusible metal will melt and run out, leaving a seamless crown, bridge or plate that will fit and come nearer perfection than by any method I have seen.—*Items of Interest, March, 1898.*

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TIN FOIL. By H. L. Ambler, D.D. S., M. D. Read before New Jersey State Dental Society, July, 1897. Tin foil should always be handled with clean pliers and never with the fingers, and only enough should be prepared for each case, keeping the remainder in the book placed in the envelope in which it is sold, otherwise some extraneous matter collects upon it; when exposed to the air for a great length of time it will oxidize slightly.

In using this metal for filling we completely protect the underlying tooth structure, and if we comprehend the material and how to manipulate it we will surely be rewarded by success in saving carious teeth.

The extra tough foil which can now be obtained is chemically pure, and in the presence of perfect dryness we can take it and begin at the base of *any* cavity, and with hand or mallet force produce a filling which will be one compact mass, so that it can be cut or filed without separating into layers. On account of its pliability it is easily adapted to the walls and margins and a perfect fit is made, thus destroying capillary action and preventing further decay. Of all the metals used for filling, it is the best tooth preserver and most compatible with tooth substance, and the facility with which a saving filling can be made largely commends it. Gold in contact with immature dentin, by reason of great thermal change, may prevent complete calcification; also when dentin contains an excess of organic matter, as young teeth do, we believe that when caries begin the process is increased by thermal changes, which induce galvanic currents, attended by chemical action.

In such cases, if a metal is used, tin is good on account of its low conductivity, and because it does not change its shape after having been packed into a cavity, for contraction and expansion are detrimental to any filling material. Under tin teeth are calcified and

saved by the deposit of lime salts from the contents of the dental tubuli; we term this progressive calcification.

The oxygen in the saliva helps blacken the tin, and the metallic oxid permeates the dentin more or less, acting as an antiseptic and a protection, because it is insoluble in the oral fluids. When there is a battery formed in the mouth containing tin fillings and gold fillings, and the fluids of the mouth are the exciting media, tin will be the positive element and gold the negative element; thus when they form the voltaic pair the tin becomes oxidized and the current practically ceases. When tin fillings have been removed we have often found that the dentin was somewhat discolored and greatly solidified as compared with its former condition, and we believe that this calcification or solidification is more frequent under tin than gold, which is partly due to its being such a poor conductor of heat. We have also seen cases where the pulps have partly calcified under tin fillings, and it has been known for years that tin would be tolerated near the pulp without causing any trouble, and we feel sure one reason is on account of its low conductivity. Gold is nearly four times as good a conductor of heat as tin, and six times as good a conductor of electricity.—*Items of Interest, March, 1898.*

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EVOLUTION OF THE DOCTOR. From all lands and all places come the medical journals with their editorial complaints and subscribers' lamentations over the free dispensary evil and the so-called overcrowding of the profession. In one and all there is nothing new; people wearing sealskins and diamonds are crowding our dispensaries; the latter are multiplying; restrictive and reactionary legislation is demanded and lauded as the only possible means whereby to contend against such conditions; while the recent graduate—and his name is legion—finds his preceptor at last driven to the point of agreeing with him that he has made an ass of himself by entering a profession wherein opportunities are notoriously less than obtained twenty years ago, So much for the facts of where we stand to-day, without tracing herein our growth and development from the days of Esculapius.

Now, if this century is remarkable for one thing more than another, it is for the growth and development of new machinery; everywhere new and wonderful machines have come into use in the various industries, and everywhere the laborers have been forced

out into new and hitherto unexplored industries, while between the owners of the machine and the laborers there has waged a constant war—cruel, relentless, unceasing in its effects, but inevitable; and, as was to be expected despite all restrictive legislation, the machine has won. Progress has no concern whatever over the individual, but conserves society at large.

Hence we shall do well to bear in mind such relations in considering the so-called free dispensary evil. For the free dispensary is simply a new and improved form of labor-saving machine; evolving out of certain social necessities of our environment, it has proved conclusively that it can do the most work, at the smallest possible cost, and for the greatest number of people. No medical machine yet devised can in any way approach it in quality and facility of its work. This, we believe, is a fact that every physician will admit, and needs neither argument nor further demonstration for its proof.

It is true that there are facts which, when suddenly confronting us, seem to be a direct threat at our bread and butter, and in many industries it is not policy to admit them; but so far as physicians are concerned their best and greatest interests all lie in the direction of progress. Hence, unlike certain business men's associations that are engaged in a vain fight against department stores, medical men have no need to engage in a foolish struggle against the inevitable; comparable only to the Chartists' riots of fifty years ago, at a time when laborers sought to destroy every machine that took the work out of their hands.

What the social conditions are that go to make the free dispensary an absolute necessity, must of course be trite enough to every physician. In this country, that had barely one hundred thousand people out of employment twenty years ago, to-day we have over three million. This fact makes it scarcely a necessity to mention hopeless poverty as a result. Nor is this a merely temporary condition, for we know absolutely that, with no more free land available and consequently no chance for expansion, the army of the unemployed must every year become greater and greater. New machinery will continue to be invented, and will displace the laborer faster than new industries can be devised to meet his wants.

There are of course countless other logical reasons for the existence and maintenance of the free dispensary and the troubles of the recent graduate; such as the multiplication of medical colleges, and

the deplorable but growing intelligence on the part of the public that leads it to require less and less medicine as the years go on. But again, these are conditions scarcely to be met by reactionary legislation.

Now what is the remedy; how are physicians to receive adequate compensation for their services in attendance on free dispensaries? Obviously there is but one way, namely: Taxation. The dispensary, if it must be general, must be supported the same as our schools and colleges, and the doctors properly compensated the same as teachers. With this object in view we may be able to effect something through legislation.—*Medical Standard, April, 1898.*

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PAST AND PRESENT IN DENTISTRY. By C. N. Peirce, D.D.S., Philadelphia. It has been stated that the evolution of languages, regarded as a psychological process, is largely determined by social conditions.

The following inquiry seems pertinent: Is there a profession, an industry, an enterprise of any kind affecting the human family that has been so shackled, so embarrassed, so handicapped by social conditions as the profession of dentistry? Compare its position with that of the obstetrician, the ophthalmologist, the laryngologist, or indeed, any specialty of medicine; socially it is in the shade. Is the limited education possessed by the masses in the profession an important factor in this? Or is it the occupation itself which places a stigma upon the character of a dentist regardless of other conditions? It has been said by a prominent dentist that within the limits of the dental profession there are men so skilled in medicine and the arts that, were those pursuing the latter stricken with paralysis and the former disabled by accident, their ranks could be so quickly filled by members of the dental profession that the ripple upon the wave of society would be but temporary indeed. However this may be, there are those in the profession whose intelligence and education should be a passport admitting wherever they desired, without question or comment. Believing in evolutionary processes, and that dental education in its development is not unlike other growths, its votaries have been persistent in their efforts to advance its status from the simple to the complex, from the elementary to the scientific; yet there have been periods in this progressive stage that may be denominated as expressions of degeneracy. Of these we will speak later on.

been in response to the demand for a parchment giving the holder thereof the right to practice dentistry. Hundreds of these unearned documents have been distributed over this as well as the various countries of Europe, thereby increasing the number of charlatans in the profession, and helping not a little to sink it into that slough of despair and degradation in which it is now involved.

It was the activity of this villainous practice that led the dental profession to seek regeneration and protection in state examining boards. These were to be the "antitoxin"—the source of redemption; much was anticipated, hoped for, by many sincere and able men in the profession. Before making the inquiry as to the extent of the remedy secured from these examining boards and the realization of the hopes of their originators, let me pay a well-merited tribute to the integrity, honesty, and singleness of purpose of the professors and teachers conducting many of our schools. Men more devoted, more earnest in their advocacy of, and in their efforts for, the advancement of the dental profession are not to be found. This is well illustrated in the adoption as rapidly as possible of a broader curriculum, an increased length of each session, and an addition to the number of sessions required before a candidate for graduation could be admitted to final examination. This speaks emphatically for such schools and demonstrates the purpose of the faculties in charge.

In recurring now to the inquiry regarding examining boards: Have they given satisfactory evidence of a due appreciation of their responsible position? Has their influence been for the protection and encouragement of the best schools? Are the men composing the boards as well versed in the science and art of dentistry as the professors in the best schools? Have they given evidence of any better, or as great an interest in the advancement of the profession? Are they men of equal scientific attainments, or of a higher, unswerving moral character? These are pertinent questions. What the profession—the higher element in it—has a right to demand is that competent, conscientious teachers shall be protected against charlatanism in any form, and that proficient students, recent graduates, well educated in all departments, shall be dealt with justly—shall be relieved of a rivalry with the ignorant and unscrupulous. The truly professional men and teachers are discouraged, not to say utterly disheartened, at the commercial spirit which pervades educational

A hasty glance at the condition of dentistry and dental education fifty or seventy-five years ago, and a comparison with its condition forty or more years later, or at a more recent period, will demonstrate the marvellous change. In early times an applicant for instruction was charged a fee, the amount of which was in an inverse ratio to the time to be spent in obtaining the desired information. Six hundred dollars for three months, or two hundred for twelve, was not an unusual fee demanded and paid. The value to the prospective dentist of this economy in time was almost without price, for in a few months his fortune was supposed to be secured. Nor could the preceptor be more jealous and careful regarding the character of the one to whom he was intrusting the secrets of his laboratory and admitting to his office to watch the movements of both patient and operator. The result of this care brought men of character into the profession.

In 1846, when the first dental college opened for the reception of students, it was regarded with but little favor by those whose annual income had been materially augmented by fees given for private instruction. In order that the college should enjoy the patronage of a sufficient number of students to pay interest on the outlay and necessary expenses, it was quite incumbent on those conducting the enterprise that very limited requirements in anatomy, physiology and chemistry should be exacted, and also limit in time required to obtain a degree and an attesting parchment. But limited as it was, it was an advance in the opportunity offered for thorough, honest teaching in the practical branches—operative and prosthetic. One important element, however, was eliminated—the personal contact with and the influence of teacher upon pupil.

Within six years from the establishment of the first school, with fifty students in attendance, three were in successful operation, with a patronage of a little more than two hundred students in the three. In 1870 five schools had been established, their combined classes numbering but about, or less than, three hundred students, while in 1896 the country enjoyed the disgrace, shall I say, of fifty-eight dental schools, with over six thousand five hundred (6,500) names on their matriculating lists.

That one or more schools with centres and agents for the sale and distribution of diplomas have been established in this country is a well-recognized fact, but it must be remembered that these have only

ber thereof, who also extended personal congratulations, and requested a friend to write a letter to the successful individual "expressing in complimentary terms the satisfaction given the board." A few days subsequent to the *personal interview* and reception of congratulatory letter, imagine the young man's surprise at receiving the following from the secretary of the board:

"DEAR SIR,—I regret to inform you that your examination before the examining board was not satisfactory, and it will be necessary for you to refrain from practicing dentistry in the state. You will have an opportunity for a re-examination."

(Date in July.) (Signed by secretary of the board.)

This correspondence was shown to a man of prominence, an ex-representative, and three days thereafter the applicant received the necessary certificate, and without another examination or waiting four months for it. These facts are certainly evidence of the absence of any fixed principles, or of a settled policy on the part of the board to advance the status of the profession or of dental education.

Moral. Were personal considerations a factor in the above cases? Evidence of dishonesty or degeneracy are always painful to recall and record, but unless some steps are taken to check this downward tendency and avert its consequences, dental education will be greatly impeded and the position of the profession a travesty, a burlesque, on a scientific pursuit.—*International Dental Journal, April, 1898.*

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ALVEOLAR PYORRHEA. By Dr. G. H. Thompson, Honeoye Falls, N. Y. Read at annual meeting of 6th, 7th and 8th District Dental Societies of New York State. I will refer briefly to the etiology and treatment of alveolar pyorrhea. In no disease of the oral cavity has the scientific research of the past few years produced more beneficial results. It is but a short time since all cases of loosened teeth with a discharge of pus from the gingival border were grouped under one class and considered due to local causes. Now we look farther and endeavor to trace to their fountain-head the various symptoms presenting themselves. In some cases this is a comparatively easy matter; in others it requires the most painstaking and exhaustive examinations.

We find two distinct forms of the disease—the one local, taking its origin in the saliva, the other systemic, due to some constitutional derangement. In the first form we find the exciting cause in

institutions to-day. The atmosphere of barter and sale infests the class-room, and high ideals in the pursuit of a chosen profession are not encouragingly present in the majority of students.

In a dental school the recital of a practical case, or the description of a manipulative process has every ear and eye; not a word or movement to be lost. But the origin of a structure, the etiology of a disease, the evolution of a form—not having a fee apparent or prospective—is a matter of inattention and indifference.

Have the examining boards tended to remedy this evil? Have they encouraged the student to ideals? Do they estimate the value of well-grounded principles and urge to proficiency in such? Or are they not, at least some of them, burdened with the same commercial spirit, seeing no value in anything save possessed of an earning capacity?

The position of a critic is an unpleasant one, but when devoid of personality or malice may stimulate to improved conditions. A student having completed *only the first year's course in college*, after an examination by a state dental board, received the following certificate:

"It gives me great pleasure to inform you that your examination before the board was satisfactory in every respect, and I have been instructed to express to you the appreciation of the members of the examining board as to the high standard of the work which showed such careful and thorough preparation on your part, and at the same time to congratulate you on the fact of your being the first applicant who has come up under (*the five years' clause*) our present arrangement who has passed the examination at his first examination. We wish you the greatest success in the profession you have entered under such favorable auspices."

(Signed by secretary of the examining board.)

This certificate naturally led the holder to believe it insured entrance into the senior class, and for that purpose was presented to the dean. This application was positively refused, but that the applicant might also be convinced of unfitness for such promotion he was asked to submit to an examination in physiology, after which the request was not repeated.

A graduate of more than usual merit, having received a diploma, which was shown to an examining board, passed before said board all examinations satisfactorily, at least was so informed by a mem-

the tissues have become so starved that the system is unable to throw them off in the regular way. In our treatment we should distinguish between these exciting causes. The systemic treatment of the one suffering from an overabundance of tissue-producing material would be quite different from the one where there was a lack of this material. In regard to diet, the first should be restricted to such an amount of nitrogenized food, whether animal or vegetable, as the system can satisfactorily dispose of, having at the same time due regard to nutrition and strength of body. Plenty of exercise is necessary in order that the system may be induced to use up the extra food products in a legitimate way. The second should have a fairly full and nutritious diet. All malt and stimulating liquors should be prohibited. Both classes should drink plenty of water. Alkaline salts, that will cause an elimination of the uric acid from the blood, should be advised. The bitartrate of lithia, introduced to the profession by Dr. E. C. Kirk, acts very happily in this respect. The digestive organs need attention, and for this purpose we should invoke the hearty cooperation of the physician, as no amount of lithia salts will cause an eradication of the trouble. The local treatment by the dentist would be much the same as in the case where the disease was salivary in its origin. No matter how permanent we may think our treatment, the trouble may recur. We should warn our patients to return to us on the reappearance of the symptoms.—*Dental Cosmos, April, 1898.*

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CLINICAL REMARKS ON MISCELLANEOUS CASES. By Edmund W. Roughton, B.S., M.D. (Lond.) F.R.C.S. Eng. Case of syphilitic necrosis of nasal septum and palate. Removal of sequestrum through nose without perforation of palate.—A laborer was sent up to me from the country as an incurable case of ozœna. On examining the nose I found that the septum was extensively necrosed. I removed several small sequestra and then found that there was a large piece of dead bone which, although loose, I could not dislodge without giving the man more pain than he could stand. A few days afterwards I had the patient anesthetized, and after somewhat of a struggle I managed to extract from the nose a sequestrum an inch and a half long, half an inch wide, and more than a quarter of an inch thick. It consisted of the median portion of the hard palate as far forward as the anterior palatine canal, and the

in a deposition of calcium phosphate and carbonate around the gingival border. This deposition gradually accumulates and infiltrates itself into the gum-tissue and pericemental membrane, causing inflammation and subsequent discharge of pus. Our treatment of this form consists in, first, the thorough removal of all deposits. To accomplish this we should employ suitable instruments both for the hand and the engine, and taking one tooth at a time proceed carefully, avoiding the laceration of the surrounding tissues as much as possible. By passing trichloracetic acid on a piece of orange-wood around the deposits they may be removed much more readily. Where we find pus exuding the pocket should be washed with pyrozone and then packed with cotton saturated with a suitable antiseptic, and for this purpose listerine acts well. The patient should be given a mouth-wash for home use and instructed as to its use.

In the second form we find the symptoms of an entirely different character. Here we find local treatment by the dentist unavailing, unless coupled with an intelligent systemic treatment. In this form of pyorrhea we find the deposits upon the apical portion of the tooth. To distinguish the trouble in this case is sometimes very difficult, and for this reason our diagnosis should be performed with great care. Urinary examinations should be made and oftentimes repeated.

We find from the experiments made under the direction of Dr. C. N. Peirce that the deposits consist of calcic urate, sodic urate, with some calcic phosphate and carbonate; uric acid is the predominating element of the urates, and its existence shows that it is a precipitate from the blood exudation. We find that the tissues most liable to receive this exudation are the connective tissues, on account of their density and non-vascularity. It is easy to be seen why the pericemental membrane, composed largely of connective tissue, should become the seat of these deposits. The deposits are found upon teeth where there is a faulty articulation, or a tooth in which the pulp has died, and by this means set up an inflammation of the surrounding tissues

We find two classes of patients suffering from an excess of uric acid in the system. In the one patient we find the excess due to an imperfect oxidation of food products, superinduced by high living and a lack of exercise. Then we find the anemic patient. Here

rather extensive necrosis of the maxilla, I determined to explore the parts affected with a view to removing the sequestrum if possible. An anesthetic was therefore administered and the mouth fully opened with a gag. I found that the sequestrum was not loose, and being unable to determine its extent, I contented myself with gouging away enough of it to make an opening about a quarter of an inch in diameter into the antrum.

The immediate result of the operation was not very encouraging. The pain was only slightly diminished and the trismus was unaffected, but the antrum was drained and could be kept fairly clean by irrigation. About a fortnight after the operation there was much swelling of the hard and soft palate on the affected side, extending to the naso-pharynx, blocking the eustachian tube and causing deafness. I then began to fear that the necrosis was extending and that I should be obliged to attempt some further and more extensive operation. As the swelling did not increase I decided to leave matters to take their own course. About two months after the operation the patient detected that something in the jaw was loose, and after one or two attempts managed to extract a sequestrum about the size of last joint of thumb. On examination I found that it consisted of the tuberosity of the maxilla, with a portion of the floor of the antrum. After this he soon got well, as the discharge ceased, the swelling subsided, the hearing power was regained, and the general health improved wonderfully. The opening into the antrum filled in to a large extent with soft tissues, and has now been effectually covered by a plate bearing teeth replacing those that had been lost. He has now given up morphia, takes only a moderate amount of stimulant, eats and sleeps well, and has resumed his ordinary occupation.

There are several points of interest in this case, but the question which interests me most is what was the cause of the necrosis, and was the phosphorus which he had taken in such large doses responsible in any way for the trouble which ensued. It is well known that inhaling phosphorus fumes is a fertile cause of necrosis in people who have carious teeth, but it is open to doubt whether phosphorous when absorbed through the stomach can produce the same effect. It occurred to me that phosphorous fumes might reach the mouth by eructation from the stomach containing the partially dissolved pills, but the patient denied having experienced anything

portion of the nasal septum which is formed by the crests of the superior maxillary bones. The muco-periosteum of the hard palate was not injured, consequently there was no perforation and speech was not in any way affected. The patient took iodid of potassium in ten-grain doses thrice daily. The discharge soon ceased and he went home cured.

There are several lessons to be learnt from this case. First, with regard to the use of the word ozœna. Ozœna means an offensive discharge from the nose. This condition is often produced by atrophic rhinitis, and some people use these two words as if they were synonymous. But there are other conditions causing an offensive nasal discharge. In this case the cause of the discharge was syphilitic necrosis. Second, whenever there is a purulent nasal discharge the nose should be carefully examined with light, speculum and probe. Third, when a sequestrum of the palate can be removed through the nose it should not be attacked through the mouth. Had the palate been perforated in this case the speech would have been greatly impaired.

Necrosis of maxilla in a patient who had taken (medicinally) large quantities of phosphorus.—A gentleman aged 45, as a result of worry in connection with money matters and family troubles, became addicted to the use of alcohol and of morphia. As a natural result his general health suffered considerably, and this led to his taking various tonics and amongst them phosphorus. For about two years he took rather more than a grain of phosphorus a day in the form of a pill. A few months before he came under my care he had a carious upper molar filled. This was followed by much pain, due apparently to inflammation of the bone surrounding the socket. The tooth was removed, but without giving the desired relief.

When I first saw him he was in a wretched condition. He could take no food except a little soup. He took large quantities of brandy during the day, and could not sleep at night except when under the influence of morphia. He was suffering great pain in the right upper jaw, radiating over the whole of that side of the head. The mouth could be opened only to the extent of separating the incisor teeth about half an inch. A probe passed into the socket of the extracted molar impinged on dead bone. There was a purulent discharge from the right nostril, indicating that the trouble had extended to the antrum. Feeling sure that he was suffering from

a class of case which is not very rare or very interesting is, that I wish to impress upon you the importance of removing the tooth, the whole tooth, and nothing but the tooth. Should a stump be unavoidably left behind, it is well to inform the patient that further treatment will be necessary. His confidence in your skill will not be increased if he has to put up with a pus-discharging sinus for months or years, and finds out eventually that it has been due to an imperfect operation performed by you.

The patient was a man, aged about 30, who had had a sinus discharging pus on the gum near the roots of the upper cuspid and lateral incisor of the left side, which had been incompletely removed. A probe passed into the sinus impinged on something hard, whether dead bone or a buried stump I could not tell. Under anesthetics I proceeded to expose the affected parts, but the operation was cut short by the patient stopping breathing. We resuscitated him all right, but deemed it wise to leave the operation unfinished, and as might be expected no benefit resulted. I lost sight of the patient for a year, when he again submitted to operation, and I removed two buried stumps, scraped out the sinus, and effected a cure.

Necrosis of mandible (probably of dental origin), followed by fracture of mandible during mastication.—This man came some months ago with swelling of the lower jaw near the angle on the left side. He had a carious molar extracted. It soon became evident that there was rather extensive necrosis, for numerous small pieces of bone came away from time to time, and eventually one large piece about an inch long. One day when he was eating he felt a snap. Next time we saw him we found that his jaw had broken right across at the seat of necrosis, and that the anterior fragment was overlapping the posterior.

The question that presented itself to us most forcibly was how we should secure union and overcome the deformity sufficiently to restore the bite. The fracture being near the angle, there was no possibility of fixing any form of retentive apparatus to the posterior or smaller fragment, therefore the choice lay between adapting some form of interdental splint and wiring the fragments together. As my dental colleagues did not seem sanguine as to the result to be attained with the interdental splint, I decided to wire the fragments, and with this object in view recommended him for admission to the hospital as soon as the discharge of pus had ceased and the sinus in

of the sort. On the whole I am inclined to think that the phosphorus was not the cause of the necrosis in this case. I regard it as a case of necrosis of dental origin in a patient whose vitality was at a very low ebb.

Acute necrosis of mandible. Pyemia. Death.—A boy, aged 7½ years, sat in a draught at school one day. The same night he complained of pain in the left side of the face. Next day his face was swollen and his temperature 105. Three days later rigors occurred, he was slightly delirious, and the swelling had extended to the parts below the jaw. I saw him on the sixth day of his illness and found the first molar quite loose and pus welling up around it on pressure. I removed the tooth, which was apparently quite healthy, and incised the swollen tissues in the neck freely. On the following day there were signs of peritonitis and pneumonia, and the child died eight days from the first onset of his illness.

I regard this case as one of acute infective panosteitis of the mandible, that is to say, an acute inflammation of the bone due to the action of microorganisms, probably the staphylococcus pyogenes aureus. Whether the case commenced as an alveolar abscess or not is comparatively an unimportant point. Inasmuch as there was no dental caries, the microorganisms must have reached the affected part through the blood stream and not through the mouth.

Alveolar necrosis of mandible involving mandibular nerve.—A young woman came to the hospital some two or three years ago, suffering from a carious lower third molar. There was very severe pain extending along the course of the mandibular nerve, and the skin over the chin on the same side was anesthetic. The tooth was extracted but the pain was not relieved. I passed a probe into the empty socket and detected dead bone, and a few days afterwards I removed a ring of dead bone. The pain did not subside at once but went away gradually. In this case the inflammatory trouble had evidently spread to the nerve and set up neuritis, which continued for some little time after the source of irritation was removed. I lost sight of the patient as soon as her pain was cured, so I cannot say whether the anesthesia was permanent.

Sinus discharging on gum, due to a buried stump.—This is one of several cases which have come under my notice during the last few years in which a tooth has been incompletely removed and a discharging sinus has been the result. My excuse for referring to

the mouth had healed. However, when he arrived at the hospital a week afterwards he was found to have an abscess in his cheek and a temperature of nearly 105. Operation was clearly out of the question, so we opened the abscess from within the mouth. In a week's time the abscess had healed, and we sent him to a convalescent home to get into a better state of general health. On his return there was another abscess, this time pointing on the skin near the angle of the jaw. This we were obliged to open from without. I am afraid our chance of rectifying the deformity has now gone by, as there is firm fibrous union, binding the fragments together in their abnormal position.

Pain in the ear due to a carious lower third molar.—This case is an example of a fairly common condition. A nurse was sent to me on account of earache and deafness in the right ear. On examining the ear I found the membrana tympani healthy. I then examined the mouth and found the lower third molar on that side extensively decayed. The tooth was extracted and the pain was relieved. The deafness was due to eustachian obstruction, and was soon cured by inflation with the eustachian catheter.

Three cases of injury to the jaw inflicted by the surgeon during operations on the mouth.—A boy with a dentigerous cyst (follicular odontome) at the angle of the mandible. After the contents of the cyst had been evacuated I was trying to reduce the size of the cavity by crushing in the cyst walls; while doing so I felt the thinned and expanded bone break through. A four-tailed bandage was applied and the fracture united in due course without giving rise to any trouble.

A precisely similar accident happened to me whilst I was operating on a dental cyst in connection with a carious lower molar. In this case also the patient was a boy, but I was not aware that I had fractured his jaw until the first time I saw him after the operation. Good union occurred.

A short time ago I was operating on a lady's nose. During the operation the mouth was widely opened with a gag to enable me to pass my finger into the naso-pharynx. When the operation was concluded she began to talk unintelligibly, as patients often do when recovering from anesthetics. I paid no particular attention at first, but presently I heard her say "My jaw is stiff; I can't shut my mouth." Then I found there was a unilateral dislocation. On

reducing this her speech became at once clear and intelligible. She had recovered very quickly from the anesthesia, which had not been deep.

Tumor of submaxillary salivary gland. Operation. Collection of saliva in wound.—A medical student noticed a small lump the size of a marble in the left side of his neck close by the lower corner of the hyoid bone. I diagnosed it as an enlarged gland, probably tubercular. I removed the tumor and found that it was closely adherent to the lowest part of the submaxillary salivary gland. During the operation he had a sudden violent attack of coughing. This might have been due to the presence of mucus in the throat, but inasmuch as he took the anesthetic (chloroform) very quietly and nicely, I think it was due to stimulation of the superior laryngeal nerve during manipulation of the tumor.

The wound healed by first intention. When I removed the dressings and took out the stitches (a week after the operation) I found that there was a swelling just as big as that for which I had operated. In the meantime the supposed gland was subjected to microscopic examination and proved to be a new growth exactly resembling the tumor so often found in the parotid gland. My first impression was that the growth must be highly malignant and that recurrence had already taken place. In a few days, however, I was able to detect fluctuation. A tenotomy knife was then inserted through one end of the scar and about half a dram of viscid saliva evacuated. There was no further trouble. It is now about three years and a half since the operation and there is no sign of any return of the disease.

Tubercular glands of neck, secondary to carious teeth. Operation. Injury to parotid gland.—A young lady was sent to me by Mr. Frank Farmer. She had a lump in the left submaxillary triangle, obviously a glandular swelling. She had had some trouble with her lower molars on that side, which Mr. Farmer had treated. However, in spite of the removal of this source of irritation, which I have no doubt was the cause of the glandular enlargement, no diminution in size took place, so I advised her to have the lump removed. I operated and excised two tubercular glands. One of them was very closely adherent to the parotid salivary gland and had to be dissected off it, some of the lobules of the latter being injured in the process. I dressed the wound five days after oper-

ation and found it healed, but there was a fluctuating swelling about twice the size of the original glandular tumor. I reopened one end of the wound and drained away about two drams of clear watery saliva. The saliva continued to leak into the wound for a week. During that time I kept in a small gauge drain. The wound healed soundly and there has been no further trouble with it.

In this case it seems to me pretty clear that the tubercular infection of the glands below the jaw took place through the carious teeth. I believe that tubercular infection occurs in this way more often than is generally admitted. When we remember that tubercle bacilli have ready access to the mouth by ingestion of tuberculous meat or milk, and that tubercle bacilli have actually been demonstrated in the pulps of carious teeth, it is not to be wondered at that infection of the glands of the neck should occur. It is worth while mentioning that this patient was a healthy country girl with no tubercular history, either personal or family. I therefore hope that the removal of these tubercular glands has at the same time removed all tubercular infection from her system.—*Brit. Jour. Dent. Sc., April, 1898.*

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ELONGATED UPPER MOLARS. It often happens that the upper molars are elongated to such a degree as to prevent the use of antagonizing molars upon a lower partial denture. This difficulty can be utilized to the decided advantage of the patient. Let the base-plate be of modeling compound to give rigidity. Mount soft pieces of wax upon the base-plate and have the patient close the jaw naturally. The impression of the elongated molars is made in the wax and this can be duplicated in fusible metal. Where these teeth are not only elongated but present an oblique position, this method insures a more perfect occlusion and mastication even more thorough than if teeth were employed.—*J. A. C. in American Dental Weekly, April, 1898.*

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TREATMENT OF PULPLESS TEETH WITH HYDROGEN DIOXID, ETHEREAL SOLUTION. By George S. Allen, D.D.S., New York. Read before the N. Y. Institute of Stomatology, Feb. 1, 1898. Notwithstanding the great amount of study and care taken by biologists and chemists, the production of an ideal germicide for stomatologists seems yet afar off. In medicine the chief uses for

which a germicide or antiseptic is employed are either to keep pathogenic germs outside the system or from open cuts or wounds, or to provide a serum that will render the system immune to their hurtful action. So far as the teeth are concerned, for reasons not necessary to mention, the main want seems to be to find a germicide that will either utterly destroy the germs of putrefaction and fermentation, together with the decomposing contents of the pulp-chamber and tubules of so-called "dead teeth," or form with them some indestructible and inert compound, one that will not be a menace either to the safety or appearance of the teeth afterwards.

None of the organic germicides, such as creosote, carbolic acid, or any of the essential oils, will meet the conditions. Most of them are simply antiseptics, temporarily only inhibiting the growth of germs. Very soon they become an additional source of danger, for in time they are acted upon by the germs and destroyed, and so add fuel, as it were, to the flames. A pledget of cotton soaked with any one of the above named agents and placed in the open cavity of a tooth in a few hours becomes offensive and exhibits all the characteristics of decomposition and destruction. Of all the agents employed that will act upon dead tissues and form an indestructible compound, formaldehyde, I believe, is the most effective. I am uncertain, though, as to the duration of the compound that is formed—that is, whether it is absolutely indestructible by the agencies in the mouth for any great length of time.

Formaldehyde is a gas that is held in solution in water. A forty-per-cent solution is generally employed, but it is not permanent, for even if kept corked it is constantly losing its efficiency. In a preparation that I have had for a year or so in my office, one can to-day hardly detect the odor by placing it to the nostrils. And the odor is usually very strong and pungent. It is, however, a very valuable agent, is a real germicide, and is rapidly growing in favor.

The action of hydrogen dioxid is that of a destroying agent. It unites with the organic products of a dead pulp and absolutely destroys them as well as the germs themselves. The dead material is carried away with the gases generated. Hydrogen dioxid is simply oxygenated water. The symbol of water is H_2O. Hydrogen dioxid is H_2O_2. In other words there is an extra atom of oxygen united with the two atoms of hydrogen. Pure hydrogen dioxid is a heavy liquid which is a chemical curiosity and most dangerous to handle.

We know it only in its solutions—either the aqueous or the ethereal solution. The two solutions have somewhat different properties, although acting on the same lines. The H_2O_2, in breaking up, becomes H_2O_2plus the atom of oxygen liberated, and it is this atom of freshly liberated oxygen that does the work sought for. The ethereal solutions, five and twenty-five-per-cent, we are acquainted with are fairly permanent ones. The figures are accurate and really represent the strength of the solutions. They are caustics, but their caustic properties are not injurious and soon pass off. The treatment of a tooth containing a dead pulp with H_2O_2 is a very simple matter. The object desired is to bring it to an aseptic condition, and it is to this point more than all others that I wish to draw attention. The virtues of H_2O_2 as a bleaching agent have been heralded for several years, and in the hands of almost all good practitioners it has become an agent they cannot do without, its action being so quick, so certain and so satisfactory to both operator and patient. But no attention, so far as I am aware, has been drawn to the fact that these teeth ought to be treated with H_2O_2 or with some other germicide, not alone to bring about the natural color but also to restore the teeth to a healthy and so far as possible aseptic condition. I have been in the habit, since the first preparations were brought to our notice, of treating pulpless teeth, even molars and roots preparatory to capping, where discolorations would not be noticed, with H_2O_2 for the purpose of bringing them to a healthy condition, and the practice is proving very valuable. The treatment is, of course, the same that one would employ in bleaching—the apices of the roots being closed and the rubber-dam applied when possible; the H_2O_2 is freely used.

As to bleaching I would say a word. Many use a twenty-five-per-cent ethereal solution and some a five-per-cent for this purpose. Others still claim they obtain a more prompt and effective action by means of the electric (cataphoric) current. So far as I can see there is nothing gained by using the cataphoric current for bleaching purposes. There is no advantage in using the twenty-five-per-cent solution of hydrogen dioxid, and I always employ the five-per-cent solution. If a five-per-cent solution is used the evaporation soon reduces it to a twenty-five-per-cent solution, and by repeatedly swabbing out the cavity the desired change in color can be quickly obtained. I do not know that I have ever failed in my

effort to bring a discolored tooth back to its normal color. It is well to be cautious and stop a little short of the full measure of success. Then seal a small quantity of the five-per-cent solution in the tooth for a day, and usually no further treatment will be required. Bleaching can be and often is overdone. Great care should be exercised in guarding the adjoining teeth, if living, from the action of the agent. Even if the tooth be sound it may be affected, but if there happen to be an open cavity, there will surely be trouble and possibly intense pain, which may last for several days. A gold filling is only a partial preventive at best. To guard against these unpleasant sequences one must either isolate the tooth he is operating upon or else protect the adjoining teeth with a coating of wax or rubber in some way so that the H_2O_2 will not come in contact with them.

Whenever it becomes necessary to remove the pulp from a tooth the contents of the tubules also should be removed, for the latter are quite as likely to prove a cause of future trouble as is the pulp itself. In fact, it may safely be asserted that far too little attention has in the past been given to this point. It is only partly true that the dentinal fibres are hermetically sealed in the tubules after the pulp-chamber has been filled. The contents of pulp-chamber and tubules once removed, too great care cannot be taken to prevent the ingress of germs or germ foods in the future. H_2O_2 is, so far as I know, the only agent that will completely make way with everything objectionable.

In the treatment of deciduous teeth, when from absorption of the roots root-filling is impracticable, an easy and reasonably sure method of practice is, after the removal of the pulp and contents of tubules, to first sterilize the pulp-chamber and tubules by using the three-per-cent aqueous solution of hydrogen dioxid. The open ends of the tubules should then be closed with some preparation like cavatine, and the cavity and pulp-chamber only filled with gutta-percha or other soft filling material. A temporary tooth carefully treated and filled in this manner seldom gives trouble, and the absorption of the roots is not necessarily interfered with.

"The most satisfactory manner of obtaining absolute H_2O_2 for dental purposes is by immersing a pledget of absorbent cotton in pyrozone, twenty-five-per-cent solution, and allowing the ether to evaporate. To prepare a fifty-per-cent solution it will be found

most satisfactory to employ glycerin as the solvent. One tube of pyrozone, twenty-five-per-cent solution, should be poured on fifteen minims of glycerin and allowed to stand in an open dish until the ether has evaporated. The glycerin will then contain fifty per cent of H_2O_2. The uses of a solution of this strength will readily suggest themselves to the practitioner. Aqueous solutions of twenty-five-per-cent strength can be readily prepared by shaking the contents of a tube of twenty-five-per-cent solution with half a dram of distilled water and separating the mixture through a funnel, or better, by means of a pipette drawing off the ether floating on the top. The lower layer will contain the H_2O_2 in aqueous solution. Pyrozone, five-per-cent solution ethereal, can be prepared by adding the contents of one tube of pyrozone, twenty-five-per-cent solution ethereal, to half a fluid ounce of pure sulfuric ether." It is interesting to note the behavior of the different aqueous solutions towards nitrate of silver. If there should be any hydrochloric acid present, its presence will be indicated by a more or less flaky precipitate. A faint opalescence, however, does not indicate any acid reaction.

The twenty-five-per-cent ethereal solution comes in small tubes hermetically sealed. They can easily and without any danger whatever be opened. It is wise to cool the tube before making the attempt. Then hold the tube wrapped in a wet towel, gently cut the end with a file and break it off. Make the cut some distance back from the tip and point the tube away from the face.

The most convenient vessels that I have found in which to make the aqueous solutions are the one-dram (120-minim) glasses to be had at all druggists. Those with parallel sides are to be preferred. This aqueous solution, however, is not permanent. It can be kept for perhaps a week, but it gradually deteriorates and becomes cloudy and unfit for use, but as it is quickly prepared, one need not deny himself any advantages it may offer.

The aqueous and glycerin solutions of H_2O_2 do not seem to give the same amount of pain as the ethereal solutions, and this because the ether evaporates much more rapidly than the glycerin, and there would not probably be the same rapid disengagement of gas. I have within the last few days taken the twenty-five-per-cent aqueous solution and swabbed out cavities with it in living teeth when excavating, without saying anything to the patient, and no notice was

taken of it. I make these remarks with some caution, because I do not know what further experiments in this line may lead to, so that I would advise anyone who thinks of using it to be cautious, because the pain that this H_2O_2 gives is greater than that caused by any other germicidal solution that we have; if we could get rid of that one objection, I think it would take the place of every other germicide for dental purposes.

Wishing to demonstrate the action of the ethereal solutions of H_2O_2, whether it would penetrate from the tubules through the cementum and to the outside of the tooth, I took this double root of a molar and coated the outside with wax, and also the exposed broken end, so that the only entrance for the H_2O_2 would be through the pulp-chamber; I then put it in a twenty-five-per-cent ethereal solution and left it for an hour. As will be seen, the tooth, which was very much discolored and quite dark, is now restored to its normal color outside as well as inside, showing that the action of the H_2O_2 has been through the tubules and cementum, and that if the treatment had continued a great length of time there would have been pain in the socket of the tooth from the penetrating property of the gases through the whole thickness of the tooth to the peridentium. In bleaching teeth in the mouth I have many times obtained the same results. I have seen a portion of the roots exposed, stained dark yellow or brown, and restored to their natural color, the exposed portion of the root as well as the crown, and wholly from the action of the H_2O_2 in the pulp-chamber. Enamel is likewise penetrated by it through the dentin but more slowly.—*International Dental Journal, April, 1898.*

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SHOULD WE DRINK AT OUR MEALS? In an interesting and somewhat historical article, Dr. C. A. Ewald, of Berlin (*Zeitschrift fur Krankenpflege*) discusses this mooted question at some length. He considers soup, because of its small percentage of nourishing material, merely as fluid; he states that, aside from what is directly taken as drink, much fluid reaches the stomach during a meal, through the sauces and from the water percentage (both natural and by cooking) of the meats, vegetables, etc. Most persons feel the necessity of adding more fluid to the meal by drinking either ordinary water, carbonated waters, or alcoholic beverages. The more one eats, generally the more one drinks, and the greatest

eaters are generally the greatest drinkers. If drink be prohibited, the amount eaten is less; indeed, on the above very greatly depends the secret of the "Schweininger cure" for obesity. It is a well-known fact that if the appetite is weak and the mind and nerves are somewhat relaxed, a drink of water will excite the appetite and stimulate both brain and nerves; and this is due directly to the fluid and not to alcohol contained, for we find these facts the same in abstainers. The more fluid in the way of drink is added to the gastric juice, the greater is the quantity secreted; hence the greater the tax upon the gastric glands. Under normal circumstances, however, the stomach without detriment accommodates itself to a range of large quantities of fluid. Ewald says that much of the fluid passes into the intestines, another portion is absorbed; hence there never is in the normal stomach a stagnation of large quantities of liquid. The widely accepted belief that alcoholic fluids (not taken to the point of toxicity) retard digestion does not seem to be borne out by the recent experiments of Chittenden. Not even whisky and brandy seemed to retard digestion. The proteolytic power of the stomach and the power of the pancreatic juice are uninfluenced by small quantities of alcohol-containing fluids. The extraction of body warmth through cold drinks the writer considers as very much overrated. He attributes the bad effects of such drinks to irritation of the stomach mucosa, which becomes, therefore, a possible starting-point for acute or chronic inflammatory conditions. In the normal stomach the author concludes that not only does drinking at meals, within certain limits, not interfere with digestion, but it even aids this process. With patients suffering from stomach or other diseases, however, the case is different. Drinking *ad libitum* cannot be allowed. To the question, Shall patients drink nothing with their meals? Dr. Ewald answers that he sees no reason why small amounts of fluid should not be allowed, excepting to patients suffering from dilatation of the stomach. As above shown, fluids, and particularly alcoholic and carbonated fluids, will even in limited amounts aid digestion and increase the appetite and will more than counterbalance the so-called ill-effects of drinking at meals, viz., the possible slowing of digestion, the dilution of the solid constituents of the meal, the overburdening of the stomach, a very improbable lowering of body temperature, etc. Even admitting that such effects do occur, the question of drinking before, during or after meals Dr.

Ewald considers as belonging to the hokus-pokus of suggestion therapy; the physiological act is not influenced if fluid is taken one-half hour sooner or later. The fluid should not be very cold; further, we must follow the indications of the disease and as far as possible the wish of the patient. Naturally alcoholic fluids that have a direct local irritating effect will be withheld, *e. g.*, in ulcer of the stomach, new inflammatory processes, necrosing neoplasms. Another question is, How far shall we allow abnormally increased thirst to be quenched, as in diabetes, fever, and some chronic diseases? The writer answers that the thirst should be quenched with as little liquid as possible. This is particularly true in cases of stomach dilatation, when the patients have the tendency to drink large quantities, partly because stomach absorption is very slow and imperfect. Moreover, though this seems paradoxical, thirst may be lessened by forbidding water as a drink. Then, too, thirst often depends upon dryness of mouth and pharynx; so frequent moistening of the mouth and gargling will often lessen thirst.—*Medical Record, April, 1898.*

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TWO POINTS. M. A. Mason, D.D.S., Fort Wayne. A neat little marker to use on broaches in measuring root-canals is the little round rubber waste made by using the punch on the rubber-dam. A broach will easily pierce the rubber, which can then be readily adjusted to any length.

A practical point came to hand to-day that may some time be of use to some of your many readers. A young lad of tender years was taken by his mother to the dentist. He was very brave and talkative until seated in the operating-chair preparatory to an examination, when he absolutely refused to open his mouth. After considerable persuasion on the part of the mother and the dentist, without avail, the mother, impatient with her offspring, grasped him by the nose and shut off his supply of air until he was compelled to open his mouth.—*Indiana Dental Journal, April, 1898.*

PARISIAN LADY SPECIALIST.—A lawyer writes to *The Lancet*, asking who was Dr. Marion Sims. Being a layman, he says, he had not heard of him, "but," he continues, "I happen to have seen the other day a circular bearing the name of a chemist not unknown, describing something invented by the 'late Dr. Marion Sims, a famous Parisian lady specialist.' I once heard of a man who took Marion Crawford down to dinner, and found her a most charming and accomplished lady. If this is a parallel case it might amuse your readers to hear of it."

Letters.

NEW JERSEY LETTER.

ELIZABETH, N. J., May 20, 1898.

To the Editor of The Digest,

MR. EDITOR:—On the 16th inst. the Central Dental Association held its last meeting until fall, and as usual it was well attended. Dr. Dwight L. Hubbard read a paper on "Some Contributory Causes of Disease of the Antrum—Preventive Treatment." It was a practical and scientific exposition of this often troublesome disease. Dr. Hubbard is dean of the New York Dental School, which he is raising to a high standard of excellence by his energy and zeal. He is a valuable acquisition to the corps of dental instructors. His manner is attractive and his address forcible and clear.

The C. D. A. always has music during the banquet which precedes the meeting, and this time we had several members of a stranded opera troupe. We have before taken advantage of a like state of affairs to secure some fine talent.

At the opening fall meeting Prof. Trippler has positively promised a paper on liquid air, and also to perform some of his wonderful experiments. This agent bids fair to come into practical use in dentistry, and we await its development with great interest.

We understand that the board of examiners wrestled with eighteen or twenty candidates at the recent meeting, for the first time under the new law. We do not know how many failed to pass, but some were not successful. As usual, New Jersey is receiving its customary pounding from some of the dental journals. It is noticeable that two of the editors who have attacked the law are also college professors. It would seem that their criticism was not altogether unbiased. Blessed be New Jersey, in that she has no dental college to have her board influenced by college men.

The section of the new law which the *International* attacked, which allows a person to come before the board upon a certificate signed by five reputable practitioners, attesting his fitness and character, is in reality a step in advance, as is the Massachusetts law. If anyone can successfully pass the practical and theoretical examinations of the board, and has the necessary preliminary education,

why should he not be allowed to practice? Further than that, New Jersey does not allow class legislation, as it is unconstitutional, and to prevent any but college graduates from being eligible for license is class legislation pure and simple.

All our energy is now directed toward making a great success of the summer state meeting, which is to be held at Asbury Park, July 21–23, and everything bids fair for a large attendance and an interesting and practical meeting. The various committees are gathering their material together, and reports were made to the officers at the C. D. A. meeting.

At the meeting of the New York Institute of Stomatology on the 3d instant the society was successful in drawing to the afternoon meeting about eighty men from New York, New Jersey and the Eastern states, which was an excellent showing. The papers at the afternoon meeting were upon the one subject of independent journalism, and it looked very much to an outsider as if it were an effort to boom a certain dental journal. There was a dinner at the hotel between the meetings, which was well attended, and Jersey men were there in abundance. It was equal to the dinners of the C. D. A., which is as high praise as we can give. At the evening meeting a very undignified and uncalled-for attack was made on one of the editors present, who was a guest of the society. It was read from manuscript, so was not called forth upon the spur of the moment, and it cannot be seen what excuse could be offered for this indignity. The person against whom it was directed was gentlemanly enough to pass it by without any answer, which clearly gave him the vantage-ground.

We hear that New York has gone New Jersey one better in its dental law just amended. Cannot find out just what it is, but know that it makes it much harder for the dental parlors to exist.

The New York State meeting is a thing of the past. It was a very large and successful convention, the best and finest for a number of years. The lobby of the Kenmore was well filled with prominent dentists from all over the state, as well as some from the adjoining ones. The papers read were above the standard and were well received.

The question of forming an Eastern branch of the National Dental Association was brought up during the meeting as advertised. It was fully discussed and practically killed by being referred to the

meeting of the National in August. It was the concensus of opinion among a number who were spoken to about the subject previous to the meeting that it was ill-advised and savored too much of politics, which they have been trying so hard to eliminate.

There has been considerable discussion about accommodations at the Omaha meeting by a number of persons in the East, and serious objections have been raised about going there. Many have favored Chicago and some have mentioned other places that could properly look after the comfort of members. Cordially yours, HORNET.

NEW YORK LETTER.

To the Editor of the Digest, NEW YORK, May 20, 1898.

MR. EDITOR:—The New York Institute of Stomatology opened the series of meetings May 3 that will follow from now on to autumn. There was material for much mental acting and we had it, as will be made known by the published proceedings. We are glad to add that the meeting was a decided success, in a goodly number of well prepared papers, freely discussed, and a menu that was a credit to the proprietors of the Windsor Hotel. To be sure, there was a marked absence of familiar persons. This is easily accounted for in New York, as the split in the odontological society has taken on a seeming decision to stay split, although there is a little backward leaning from both sides, but not enough to indicate an entire willingness to let bygones be so. While it is a subject of no little regret by many, it looks as though the break were irremediable.

Among those from outside New York was the venerable John B. Rich of Washington. Hale and hearty at 87, and daily at his chair. He looks his age in the face a little, but his figure is erect and vigorous. His mental action not at all abated and his voice as clear as one of fifty. In his debate he struck with all the strength and courage of his convictions against curbing the disposition to patent the improvements of dental auxiliaries, while not at all encouraging secret nostrums or processes. He did not say much to encourage the hopefulness of independent journalism, except as men would put their hands liberally in their pockets and help on by funds.

Dr. Meriam, of Salem, Mass., a greater man than ever, did credit to his ability as a debater. He stood close by President Elliot, of Harvard College, in all his denunciation of unprofessional dealing of professional men in patents. Dr. Meriam is a nice gentleman

and a credit to New England. He is not in "ladies' delight" cultivation any more, although once he excelled in that line, and for several years when he visited the Odontological Society of New York brought a box of his finest and gave out a beautiful boutonierre for each one. Latterly he has given attention to raising boys for college and has a son in Harvard.

Dr. Potter is a good specimen of Boston's best. His paper was conservative and very forcible in composition. Boston need not fear from more of such stamp of men.

"Plymouth Rock" Shumway is a jovial good fellow and added a genial talk. One laughs all the time while listening to him. He thinks there is little danger from patents, because most of them are good for nothing. He has tried it and found that his proved so.

The venerable father of Dr. Davenport, of New York, was present from Northampton, Mass.

Professor Litch was felicitous in his talk and conservative, trained and cultured—a good representative of Philadelphia.

Dr. Jack turns up firm and decided every time. Independent journalism is fully on his heart.

Baltimore is very fortunate to be represented by so able an advocate as Dr. B. Holly Smith. He is a careful thinker and writer. His closing peroration, from the songs of Solomon, was beautiful.

One dentist present said to us that he almost thought in reading the last New York letter that we had written it, and he said a good many things in a nice way, just as we aim to do. This reminds us that we were told by a good fellow of the craft that we say "so many good things of so many men. Do you mean them?" We replied, "How does it strike you when we mention you?"

Dr. St. John Roosa opened the discussion of the evening from a medical man's standpoint, and showed that the medical fraternity has enjoyed all the improved help in their profession by a complete absence of patent aid. As one of his profession said to us, "Dr. Roosa is a king pin among his fellows." He has risen to eminence as an aurist, both as a writer and practitioner. He has been foremost, as we emphasized in some of our former letters, in securing immunity from the old written code of ethics for the medical fraternity of New York State, so that medical men have the privilege of consulting with any other member of the profession, of whatever party. He declares that instead of its being in any sense a detri-

ment, it has given a decided impetus in advance, although they are debarred from participating in the American Medical Association. Bigotry can foster only narrowness and be a hindrance to the best interests of all that belongs to the helpfulness of mankind.

Dr. Davenport, of New York, made the point of the evening, we think. He said we have arrived at a period of development that calls upon us to produce an avenue for strictly professional lines; and in no way can we so emphasize our ability as professional men as by a strictly professional journal. Say what we may, there is *esprit de corps* in our calling, and the disintegrating results that are so manifestly apparent in these days come from a lack of recognition of the fact. Dentistry is a humanitarian calling and there is no escape from the moral obligation that holds us to the professional character of our position, although we are in much danger from the grasping commerce of the day, and we do not believe we are going to see any decrease from it until the end of the age comes.

Dr. Bogue, the president, felicitously said in closing: "Christianity will not convert the world in our day at least, nor will altruistic doctrines prevail, but we can improve and we should do so.

It was intimated that the new national body will be asked to consider the proposition of a truly professional journal, but the trade journals will fill the place for which they are fitted. There is a demand for them and it will be satisfied.

There is a rumor that Dr. Farrar is not well. We say Stop! put down the books and go to Europe. No man has a moral right to go to a premature grave, and Dr. Farrar is too useful a man to break down in his prime of good judgment.

We are glad to report that Dr. Norman W. Kingsley is much improved in health.

Queer report from the Washington correspondent concerning a law-suit for illegal practice in dentistry. So we know it all? It does not look as though we did from expert testimony. Jurisprudence is much needed in our line. If ever much of our legislation gets an airing before a court of legal knowledge, we shall find that would-be legislators of dental law have overdone things.

What a statement this, "Only one oral surgeon in the United States." What would our dear and much-admired Garretson say if he could speak? We have omitted to say that these remarkable sayings are published in the May number of the *International.*

The writer of the letter has much ability as a letter-writer, and is only emphasizing the facts as they came before the court of the District of Columbia.

We are soon to be electrified with another marvelous invention from California, and from what we hear it will make us look up.

We have but lately learned of the death of another of Brooklyn's favorite dentists, Dr. Elmendorf. He was one of the early members of the Brooklyn Dental Society, and no member was more popular. His musical abilities were very entertaining, and often gave pleasure to the society at its banquets. He had a large practice and was much liked by his patients.

Professor Truman's editorial in the May number of his journal shows that the indications are not favorable for harmony in the new national body. We think the editorial quite right—that it is too soon to consider the formation of auxiliary bodies in the four corners of the country. Professor Truman sees only a repetition of methods that have worked ill for the American Association. We hold that merit is the prime requisite for permanent membership, and to have a truly professional association succeed it must be on a basis of true professional attainment.

A dentist who has held the office of president in many societies, both state and local, said to us within a week, "I have lost my interest in our state society and do not think I shall attend its meeting this year. The time is spent so foolishly over matters that are of so little interest, to say nothing of profit." We are glad to learn, however, that the recent state meeting was well attended and very profitable.

The New York Odontological Society has held its May meeting. The clinics were largely attended and a decided interest was manifested. Why not, when something is given that will interest? Most men know a good thing when they see it. Dr. Jackson never fails to interest, for he has something to show and shows it in a skillful demonstration. Dr. Guilford always fills the bill.

It goes without saying that Dr. S. G. Perry has a gifted way of doing things, and he puts on the poetical touch as he goes along. Poetry is worth much, for like music, it borrows a ready ear from the fearing patient, and moreover, if Dr. Perry does not prevail with his poetry, he has a fiddle which makes them dance (with delight).

Our calling is prolific with fertile ability. Dr. John H. Meyer is

"at home in the ceremonies," as the late Dr. Crowell termed it. We want more of it. We mean anomalies in artificial teeth, but how many dentists are ready to pay over fifteen cents for teeth?

We are more and more convinced that skill is what brings big fees. Professor Harlan said a good thing on his last visit to New York. "Is there any reason why I should not receive good compensation for surgical services in treating pyorrhea when I have devoted my time and talents (what I have) to make myself proficient?" When another dentist says, "All I can charge is fifty cents, or possibly one dollar, for "*cleaning teeth*," we say "amen." That is the way to put it. Cordially, NEW YORK.

PHILADELPHIA LETTER.

Dear Digest: PHILADELPHIA, May 20, 1898.

While Philadelphia is the recognized cradle of liberty and is taking much and active interest in the present conflict, which is waged to free fellow men from bondage, and while we all take great delight in Admiral Dewey's superb naval victory at Manila, and in President McKinley's firm hand over the whole situation, yet the war smoke has not clouded the professional atmosphere hereabouts in the least. Since our last letter the Academy of Stomatology has been favored with essays from two most valued practitioners—Dr. Perry of New York and Dr. Peirce of this city.

Dr. Perry's theme was the "Cervical Border," and he handled it in a very entertaining way. He felt it was a dry subject, but we fear most of us have found it at times to be a rather moist one. The Doctor presented some novel hand matrices and pluggers which added to the interest of the subject.

At a later meeting Professor Pierce presented an essay upon "Comparative Odontology." No one in the profession can speak upon this subject with more authority than Dr. Peirce; he has always been a close student and has enjoyed the personal friendship and association of many of the scientists of our time. The Doctor's discourse was very able and elaborate, being illustrated with many charts and natural specimens. The theory of Weisman, that acquired characteristics cannot be transmitted, Dr. Peirce did not accept, as he believed that modifications of structure which were advantageous to the animal were transmitted, and in this way not

only new varieties but new species might be or were established. If this were not the case the evolutionary theory, that all beings were but modifications of preexisting forms, would certainly not be sustained.

Our predecessor, "Quaker," at one time referred to the excellent library in the possession of this society and to its librarian, Dr. William H. Trueman. This gentleman is one of the rare dental practitioners of this city of brotherly love. He is a conservative, conscientious worker, a thorough gentleman, and a man of unusual mentality. Dr. Trueman, like many others, has a hobby, and it shows itself in his library. He collects all of the old and rare works bearing upon dentistry that he can lay his hands on, and when he goes abroad during his vacation seasons he visits the old bookstores and stalls and usually resurrects some valuable work. The Doctor is a great reader and has a retentive memory, and we always consider it a pleasure and a privilege to chat with him, especially upon the evolution of the dental profession. It has on several occasions been suggested that Dr. Trueman write a history of dentistry, which we hope he will think favorably of. There is no one better fitted for the task than he, and the work no doubt would prove something more substantial than a labor of love.

The young salesman (representing a Western supply house and misrepresenting Dr. Crouse and "Fellowship" alloy) of whom we wrote a few months ago, is in town again. He has yet to favor us with a call, but we get it from good authority that he is anxious to meet us. He has been converted, no doubt, and wishes to thank us for starting him on the right road. That was our object in speaking of him as we did, to show him the folly of attempting to do business upon other than business principles, and we learn that he appears to be a wiser but sadder man.

The funeral services of Dr. Thomas W. Evans, celebrated as the American dentist in Paris, who died in Paris some months ago and whose remains were brought from that city this week, will be held next Wednesday afternoon, the 25th, at St. Mary's Episcopal Church. Pending the erection of the mausoleum provided for by Dr. Evans' will, the body will remain in the receiving vault at Woodland Cemetery. A most remarkable and eventful career is ended, and all that is mortal of the man comes back to the place of his birth to repose. Fraternally, THE SPECTATOR.

BALTIMORE LETTER.

Dear Digest: BALTIMORE, May 21, 1898.

Sir Lucius O'Trigger says, "An offense handsomely acknowledged becomes an obligation"; but not to be able handsomely to acknowledge dereliction brings a fellow grotesquely on his marrow-bones. That I have not lived up to my opportunities in the last two issues of the DIGEST is not because I do not appreciate the honor or distinction conferred upon me by association with the gentlemanly and scholarly scribes, who more faithfully perform their duties; not that I am altogether above the flattery of seeing my drivel printed in a clean, well-edited journal; and again, not that I am unmindful of the delicate, not to say unmerited attention and comment of the Regulus of the *Items of Interest*, but simply that I am affected with human limitations and an Arab nature.

How's that for a bird of bright plumage? Some one will call me a terrapin next. All right, so it is not a western slider, but a real Chesapeake diamond-back; then I think I might get our friend the editor of the *Items* over to Rennert's some night and persuade him that I am not a bad bird, and I would even engage to convince him that there are no bad birds connected with the DIGEST.

By the way, three months ago I was of the opinion that every editor, every college professor, every member of an examining board, was spoiling for a fight, and when the war broke out the only question in my mind was as to how the government would make room for anyone except dentists in the army. Lowell says: "The course of events is apt to show itself humorously careless of the reputation of prophets," and so it has happened in our section. No doubt all the Western dentists have gone to war, but South it is not so. Indeed, I asked the colonel of a regiment in the Carolinas last week if he had any dentists in the state troops and he said no; he had tried to get one but he slipped off a day before the regiment started; he hadn't turned up; probably he had drowned himself. Well, I don't know; we ain't so warlike; who's afraid? I'll sass all I please. I give fair warning, however, that my scolding must not be taken for a manifestation of warlike spirit; I am fashionable, if anything.

I am delighted to notice on the program for our tri-state meeting, to be held June 3-5, three names from Chicago—Talbot, Cigrand and Crouse. This Western contingent will be welcome and no doubt

will do us good. The presence of the editor-in-chief will be a treat and will give to our meeting a sort of natural aspect. By the way, why doesn't he change the first letter of his name to G; then he would be Grouse—not necessarily of the ruffled character, though even that would be acceptable if it extended a long-standing cordial friendship into kinship, and our flocking would then be still more delightful.

Our examining board has suffered a great loss in the resignation of the president, a high-toned, zealous man, in whom the professional spirit is accentuated as it is in few. He has been a guiding spirit in dental legal matters for years, and while in our judgment not always right, he has always been clean and above suspicion of intentional wrong. We are sorry to lose him.

The ideal features proposed as amendments to our dental law failed of passage before the legislature, as did many other good measures. The character of that body was so thoroughly known to those who favored the changes, and the amendments of the quacks were so dangerous, that it seemed wise not to urge any change until we had more decent legislators to deal with.

I will let you hear from the meeting, which promises to be a corker. Cordially, ORIOLE.

TO AVOID INHALING PATIENTS' BREATH.—Dentists could save themselves from the unpleasantness and unhealthfulness of inhaling their patients' breath while performing long operations, by placing a sheet of paper from a gold-foil book before patient's nose, securing it under the dam and elastic fasteners. It also prevents moisture from the breath coming in direct contact with the gold while packing.—*G. H. Reynolds in Dom. Den. Jour.*

DRINKING WATER.—Schumburg has thoroughly gone into all known methods of purifying drinking water, and finds that bromine is the only disinfectant which can be removed after serving its purpose, without spoiling the appearance and taste of the water. The quantity of bromine used is very small; a kilogramme is sufficient to sterilize 16,000 litres of water. The author uses the bromine in the following solution: Water, 100; potassium bromid, 20; bromine, 20. 0·2 C.C. of this solution is sufficient to sterilize in five minutes 1 litre of water from the river Spree. The calcium salts or ammonia of very impure river or surface water use up some of the bromine before it has had time to develop its disinfectant properties. In such cases enough must be added to cause a slight yellow coloration of the water, which should last at least half a minute. The 0·2 C.C. of bromine solution may be removed by adding an equal quantity of 9 per cent ammonia.—*Pharm. Zeitg.*, xlii., 174.

The Dental Digest.

PUBLISHED THE

TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

MORE SOCIAL INTERCOURSE IN OUR PROFESSION.

When it is remembered that the occupation of the dentist necessarily confines him exclusively to his office during business hours, where he comes in contact with a very limited number of people, it can readily be understood how such a life must shut off the broadening influences which contact with numerous people gives in most other occupations. We scarcely see any other individuals except the patients under our immediate care, and with these the important duty of serving each patient properly, combined with the pain inflicted in so doing, makes our intercourse with them anything but pleasurable.

For these reasons it is especially important that the dentist should devise ways of having more social intercourse with his fellow men, and especially with his fellow practitioners. There is no good reason why practitioners in small towns, as well as in larger cities, should not have social relations and clubs to a much greater extent than they do. Such intercourse would lead to much good in various ways and benefit all professionally and otherwise. It would be a practical remedy for much of the littleness in the dental profession which often goes under the title of "small potatoes."

Where this sociability exists it makes its impress on each individual. It need not be wholly confined to regularly organized dental societies. Small clubs of a social nature made up of dentists would do much good. The most that is done at present is in the regularly organized dental societies, and the plan of these necessarily shuts out much of real sociability, the earnest work consuming the time and energies of each individual. Yet even the dental meetings, aside from their educational advantages, do much to give good feeling and to broaden the characters of the members.

The lamentable part of the whole matter is, however, that so far we have reached only such a small proportion of the whole number of the profession through the dental meetings, while the great mass

of dentists continue to lose these benefits both intellectually and socially. While it cannot be hoped that practitioners of long standing will ever unite with these societies to any great extent, if they have not already done so, surely the graduates and new comers can be brought into closer relationship with their profession. We often wonder if this lack of sociability in our profession is the fault of those who give their first impress to dental practitioners—the college teachers—or is it due to the material of which the classes in our colleges are made up. Who will answer?

SECTIONAL BRANCHES.

We learn before going to press that the completion of the eastern branch of the National Dental Association was deferred until the annual meeting. We think the delay a wise one, as it seems to us an open question whether sectional branches such as contemplated in this movement will be a benefit or hindrance to the national organization. At any rate the necessity for, or the benefits to be derived from these branches has never been made clear to our mind. On the other hand, we can see how they may be detrimental to the National Association. This may be our lack of full comprehension of what is expected to be accomplished, however, and we would like to see a well-defined plan of the workings of these branches in type.

There is one important change in the plans of the National Dental Association which must not be lost sight of in the formation of these branches. We refer to the change in the future membership of the National Association. The fact that only state societies can send delegates to these meetings, and these are organizations which meet only once a year, must change to a very great extent the character of the work to be done by the National as now arranged. All new members of this association coming from state societies must naturally attend to the interests of the society they represent. Heretofore all local societies and colleges were entitled to representation by delegates; consequently more varied interests were represented and considered.

We are free to admit that the work heretofore done by the American Dental Association was not nearly what it should have been, and perhaps this limiting of members to state societies will bring about a better working organization, but this change in representation was adopted for other reasons than this. It is the most radical change

in the plans of the new organization, and in time if continued will change the character of the membership and nature of the work previously done by each society which now constitutes the National Dental Association.

The question that arises in our mind is, is the membership of these branches confined to members of state societies, or is it to be made up of members of the profession belonging to other organizations. In other words, are these branches to be composed of men who shall represent the National Dental Association, or are these branches to be advisory only, without power of enforcing their plans?

It is needless for us to mention here that we think that confining the representation to members of state societies is a mistaken plan.

What we hope to see is one great organization which each year will represent the good of all the societies in the United States. This can be brought about only by the most earnest efforts of the organizations now in existence. If forming sectional branches will aid in getting this needed cooperation of local societies, it will be sufficient reason for their formation, but as yet it has not been shown that such organizations can be of any assistance in this direction in the association. Let us have a well-defined plan that we can study.

Notices.

CHICAGO COLLEGE OF DENTAL SURGERY.

The sixteenth annual commencement of the Chicago College of Dental Surgery was held April 6, 1898, at Central Music Hall, Chicago.

SOUTH DAKOTA DENTAL SOCIETY.

The annual meeting of the South Dakota Dental Society will be held at Madison, June 1-3, 1898. An exceptionally good program is to be rendered.

D. ST. I. DAVIES, Chairman Program Committee.

MISSOURI DENTAL COLLEGE.

The thirty-second annual commencement exercises of the Missouri Dental College, Dental Department of Washington University, were held at the Fourteenth Street Theater, St. Louis, Thursday evening, April 28, 1898.

CALIFORNIA STATE DENTAL ASSOCIATION.

The twenty-seventh annual meeting of the California State Dental Association will be held at San Jose, Cal., beginning Tuesday, June 21, 1898, and continuing four days.

FRANK C. PAGUE, Sec'y.

BIRMINGHAM DENTAL COLLEGE.

The annual commencement exercises of the Birmingham Dental College were held at O'Brien's Opera House, Birmingham, Ala., Tuesday evening, April 5, 1898. The annual address was delivered by Judge J. J. Banks, and valedictory by Dr. H. T. Hamblin of Texas.

NORTH DAKOTA BOARD OF DENTAL EXAMINERS.

The next meeting of the North Dakota State Board of Dental Examiners will be held at Fargo, N. D., July 12–13, 1898, and a meeting for the reorganization of the state dental society immediately following on the 14th and 15th.

H. L. STARLING, Sec'y.

G. V. BLACK DENTAL CLUB.

At the second annual meeting of the G. V. Black Dental Club, held May 5, 1898, at Minneapolis, the following officers were elected for the ensuing year: President, Dr. Glen F. Andrews; Vice-President, Dr. James E. Weirick; Recording Secretary and Treasurer, Dr. J. Milton Walls; Corresponding Secretary, Dr. Russell W. Berthel.

J. M. WALLS, Sec'y.

TO NEW JERSEY DENTISTS.

Notice is hereby given that dentists who desire to become members of the state society at the annual meeting at Asbury Park, July, 1898, will be enabled from this date to secure the necessary blanks and information, thereby saving time and securing the early action of the membership committee on all applications.

WM. E. TRUEX, Chm. Membership Committee.

NORTHERN IOWA DENTAL SOCIETY.

The fourth annual meeting of the Northern Iowa Dental Society will be held at Waterloo, July 5-7, 1898. An excellent program is being prepared, and an interesting and profitable meeting is expected. The Waterloo Chautauqua Assembly will be in session, and all who attend the meeting will have an opportunity to take in some of the best numbers on the program. Reduced rates on all railroads.

WM. H. STEELE, Sec'y.

WISCONSIN STATE DENTAL SOCIETY.

The twenty-eighth annual meeting of the Wisconsin State Dental Society will be held at Madison, July 19–21, 1898. A cordial invitation is extended to all dentists in the state of Wisconsin who are not members of the society, and also to dentists of other states, to attend the meeting. An interesting program has been provided. The hotels and railroads will make the usual reductions.

W. H. MUELLER, Sec'y. R. G. RICHTER, Pres.

MISSOURI STATE DENTAL ASSOCIATION.

The thirty-fourth annual meeting of this association will convene at Merrimack Highlands (near St. Louis,) July 5–8, 1898. All dentists practicing in the state who are not members of the association and wish to become such,

and dentists from other states, are cordially invited to attend. When purchasing your railroad ticket remember to secure certificate from ticket agent so that a rebate can be secured on return ticket. A large attendance is anticipated and we are assured of a profitable meeting.

H. H. SULLIVAN, Sec'y.

NEW JERSEY SUMMER EXAMINATIONS.

The New Jersey Dental Examining Board will hold the summer examinations at the commission rooms, 88 Broad st., Elizabeth, commencing July 5 and lasting three days. All applications must be in the hands of the secretary before June 21. Attention is called to the new dental law of the state, which requires preliminary education equal to a high-school education in New Jersey. Candidates who have not the necessary papers to show this standard will be given an examination under the supervision of the State Superintendent of Public Instruction. All preliminary examinations must be finished before the application can be accepted.

G. CARLETON BROWN, Sec'y, 88 Broad st., Elizabeth.

NEW JERSEY STATE DENTAL SOCIETY.

The twenty-eighth annual session of the New Jersey State Dental Society will be held at Asbury Park, July 20-22, 1898. The commodious and pleasant "Auditorium" has been secured for the sessions, with unlimited space for clinics and exhibits. Papers and clinics from many eminent dentists have already been secured. Preparations are being made for the largest display ever before given of electrical appliances used in dentistry. One hundred and ten and 500 volt currents will be attainable, and those having water motors to present can be accommodated with high water pressure. The Hotel Columbia adjoining has been secured for headquarters for members and visiting friends; the rates will be $2.50 and $3 per day.

CHAS. A. MEEKER, Sec'y.

TRI-STATE MEETING.

The tri-state meeting of Indiana, Michigan and Ohio will be held at Put-in-Bay, Ohio, June 21–23, 1898. This meeting will be one of the largest and most interesting of the year, and we would urge all dentists who can to attend. The railroads have granted the usual fare-and-a-third rate.

Delegates from Chicago and the West should take the Michigan Central Railroad to Detroit, where connection is made with steamers for Put-in-Bay. Full particulars regarding transportation arrangements, rates, etc., can be obtained from Mr. L. D. Heusner, general western passenger agent, 119 Adams st., Chicago.

ILLINOIS STATE DENTAL SOCIETY.

At the annual meeting of this society, held at Springfield, May 10-13, 1898, the following were elected officers for the ensuing year: Dr. Chas. P. Pruyn, Chicago, President; Dr. A. S. Waltz, Decatur, Vice-Pres.; Dr. A. H. Peck, Chicago, Sec'y; Dr. E. D. Swain, Chicago, Treas.; Dr. C. R.

Taylor, Streator, member of Exec. Com.; Dr. A. W. Harlan, Chicago, member of Com. on Dental Science and Literature; Dr. J. E. Keefe, Chicago, member of Com. on Dental Art and Invention; Dr. W E. Holland, Jerseyville, Dr. W. A. Hoover, Gibson City, Dr. P. J. Kester, Chicago, Com. on Ethics; Dr. L. W. Skidmore, Moline, Supervisor of Clinics; Dr. Garrett Newkirk, Dr. J. H. Prothero, Dr. H. J. Goslee, all of Chicago, Local Com. of Arrangements.

A. H. PECK, Sec'y.

LATEST DENTAL PATENTS.

602,084. Arm-support for dentists, Lauritz P. J. V. Kjoer, Copenhagen, Denmark.

602,572. Saliva-ejector, Arthur W. Browne and C. M. Kennedy, Prince's Bay, N. Y., assignors to S. S White Dental Manufacturing Company, Philadelphia, Pa.

602,581. Artificial tooth-crown, Merrill W. Hollingsworth, assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa.

602,582. Crown-post for artificial teeth, Woodbury S. How, assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa.

603,179. Tooth fillings, William F. Davison, Richmond, Va.

602,985. } Device for laying gold-leaf, Robert E. Hastings, Philadelphia, Pa.
602,986. } Device for laying gold-leaf, Robert E. Hastings, Philadelphia, Pa.

602,948. } Tool for laying gold-leaf, John C. F. Kunkle, Renovo, Pa.
602,949. } Tool for laying gold-leaf, John C. F. Kunkle, Renovo, Pa.

603,524. Electric dental engine controller, James J. Coachman, Rio Janeiro, Brazil.

603,280. Cuspidor for dental chairs, Frank G. McCollum, Cambridge, Mass.

TRADE-MARKS.

31,458. Preparation for the painless treatment of irritated pulps, Gustav Scharmann, New York, N. Y.

(List furnished by John A. Saul, patent attorney, Washington, D. C.)

NATIONAL DENTAL ASSOCIATION.

The next annual meeting of the National Dental Association will be held in Omaha, commencing Tuesday, August 31, 1898.

Attention is called to the fact that all who were members of the American Dental Association and of the Southern Dental Association at the time of the formation of the National Dental Association, are now members of the latter organization.

The constitution, article iii, section 5, provides as follows: "It is hereby specially provided that all persons at present permanent members of the American Dental Association and of the Southern Dental Association are permanent members of this association and entitled to all the privileges of the class to which they belonged without further action, and the treasurer is hereby directed to transcribe their names upon the roll of membership of this association."

The officers of the National Dental Association will leave nothing undone

to make the meeting at Omaha a success, and they hope the attendance and interest in the first active annual meeting of the association will be commensurate with its importance. THOMAS FILLEBROWN, President.

EMMA EAMES CHASE, Cor. Sec'y.

MASSACHUSETTS BOARD OF REGISTRATION.

The meeting of the Massachusetts Board of Registration in Dentistry for the examination of candidates will be held in Boston June 13, 1898, at 9:30 a. m., at the Boston Dental Infirmary, Tremont street. Examination in operative dentistry at 10 o'clock. Each candidate must come prepared with rubber-dam gold-end instruments to demonstrate his skill in operative dentistry. Anyone who wishes may bring his patient, but so far as possible patients will be furnished. The theoretic examination will include anatomy, physiology, histology, chemistry, pathology, materia medica, operative and prosthetic dentistry. All applications, together with the fee of $20, must be filed with the secretary of the board on or before June 6, as no application for this meeting will be received after that date.

G. E. MITCHELL, Sec'y, 25 Merrimack st., Haverhill.

News Summary.

SALE OF COCAIN.—Governor Adams, of Colorado, has signed the bill prohibiting the sale of cocain without a written prescription of a licensed physician or dentist.

TUBERCLE BACILLUS AND X-RAYS.—Bergonie and Ferre report after two series of investigations that the rays had no action on either the virulence or the vitality of cultures of tubercle bacillus.

THOSE PRINTERS AGAIN.—A local paper, speaking of a street accident, says: "Dr. Jones was quickly summoned, who, after examining the patient's purse, decided that the case was hopeless."—*Medical Times.*

PAINFUL DENTITION IN INFANTS can be relieved by frequently washing out the mouth with a 1 per cent solution of chloral hydrate, which is antiseptic as well as analgesic. Rub the gums to soothe the pruritus with the following: Cocain hydrochlorat, 15 centigrams; chloroform, 1 gram; glycerin, 20 grams; essence of roses, 6 drops.—*Presse Med., Oct. 20.*

FIXING LEATHER TO METAL.—Digest crushed galls, 9, in water, 8, for six hours and strain through linen. Soak glue, 1, in water, 1, for twenty-four hours, then melt. Coat the leather surface with the warm gall nut extract and the warm metal surface, previously roughened, with the glue, then fix together and allow to dry in the air —*Sci. Amer.*, lxxvii., 326.

REMOVAL OF TEETH FROM RUBBER PLATES BY BOILING.—Instead of holding the plate over a gas-jet until the teeth can be prised off, unpleasant odors may be avoided by boiling the plate for a few moments, when the rubber will be found yielding, and by grasping it with the pliers the rubber may be sprung from the teeth, and a few repetitions will complete matters.

DISPENSARY PRACTICE has been affected by the war. In a downtown district a falling off in attendance at one of the dispensaries was noted for a few days, which could not be accounted for until it was found there was a "run" on a neighboring bank and the patients were busy drawing out their deposits.—*Medical Record.*

ANOTHER NEW DENTAL JOURNAL.—We have just received volume 1, No. 1 of the *Dental Century.* This journal is published monthly at Madison, Wis., and the editor is Dr. William Gird Beecroft. The associate editors are Dr. W. L. Whipple, St. Louis; Dr. Don D. Cornell, Iowa; Dr. J. G. Templeton, Pittsburgh; Dr. A. C. Runyan, Michigan; Dr. W. C. Davis, Nebraska; Dr. V. A. Gudex, Wisconsin. This journal is intended to represent the dentists of the Northwest, and to be essentially practical. We wish it success.

ORTHOFORM ANESTHESIA.—Orthoform does not produce anesthesia on sound skin or mucosa, only on open wounds. Hirschbruck recommends the injection of a 3-per-cent mixture of orthoform and water, with which he has obtained excellent results. He precedes it with 0.002 cocain mur. to prevent pain from the injection. The anesthesia thus produced is lasting and the absolute non-toxicity of orthoform adapts it to many of the minor operations.—*Berl. klin. Woch.*, 1897, No. 49.

UNILATERAL PAROTITIS WITH CARIOUS TEETH:—

℞ Ung belladonnæ,
Ung Hydrarg..... ā ā ℥ss

M. S.—Apply night and morning.

Also:

℞ Cinchonidinæ salicylat ..... ℈i.
Div. in tabulæ No. xx S. One every three hours. —*Eshner.*

WHAT A MAN EATS IN A LIFETIME.—It is computed, by a contributor of inquiring mind to an English journal, that a healthy man with a good appetite and average drinking capacity assimilates into his system during seventy years ninety-six and one-half tons of material, solid and liquid; or, putting it in another way, and assuming his weight to be twelve stones, he consumes over twelve hundred and eighty times his own weight of nourishment in the course of a lifetime.

NEW BOOK BY DR. BURCHARD.—We have been favored with a copy of Dr. Burchard's "Dental Pathology, Therapeutics and Pharmacology." This volume forms the third of the series of *American Text Books of Dentistry*, of which Kirk and Essig were the first two. The book is abundantly illustrated. We give a transcript of title: "A Text Book of Dental Pathology, Therapeutics, including Pharmacology, being a Treatise on the Principles and Practice of Dental Medicine. For Students and Practitioners. By Henry H. Burchard, M.D , D.D.S., Special Lecturer on Dental Pathology and Therapeutics in the Philadelphia Dental College. In one very handsome octavo volume of 575 pages, with 388 engravings and 2 colored plates. Cloth, $5.00; Leather, $6.00. *Net.* Lea Brothers & Co., Publishers, Philadelphia and New York.

SPECIALISM APPRECIATED.—At one of our large dispensaries having special departments, an applicant recently took tickets for each class and spent the day obtaining expert opinions on the condition of his eyes, nose, throat, internal organs and skin, and it is said even had a little surgery done and got a tooth pulled.—*Medical Record.*

CRITICISM has been freely bestowed by the daily press upon a physician of New York city who declined to respond to a night call from a grocer who had refused to pay his doctor's bill. Perhaps some time the public will learn that a good way to make sure of timely medical attention when needed is by paying for what it receives as it goes along.—*Medical Age.*

MOISTURE AND VITALITY.—From a number of experiments on this subject, Dr. A. J. Ewart concludes that there is no truth in the statement often made that seeds, spores and mosses can withstand complete desiccation without losing their vitality. It is impossible to deprive anything of a vital nature entirely of water without destroying its vitality. Dr. Ewart found that the minimum percentage of water sufficient to maintain vitality is from 2 to 3 per cent of the dried weight of the organism. Protoplasm containing the minimum amount of water necessary to maintain vitality is perfectly dormant; it can neither respire nor assimilate; it can neither add to its substance nor diminish it.—*Trans. Liverpool Biological Society*, 1897, p. 151.

TO REMOVE NITRATE OF SILVER STAINS FROM CLOTHING.—A solution of iodin in ammonia water, the so-called colorless tincture, will remove nitrate of silver stains from the hands, clothing, etc., but owing to the danger of the formation of nitrogen iodid, which is a powerful explosive, it is not recommended. A solution of iodin in iodid of potassium dissolved in water is nearly as quick and quite as effective. Dissolve fifteen parts of iodid of potassium in fifty parts of water and to the solution add ten parts of iodin. When the latter is dissolved add sufficient water to make five hundred parts. Keep in a well-stoppered bottle. Treat the spots with this, and after a few minutes with a 10 per-cent solution of caustic soda, which will remove the silver iodid formed by the first treatment.—*The National Druggist.*

NASAL MICROORGANISMS.—In all bacterioscopic investigations of the nasal fossæ, in all researches as to the action of nasal mucus, etc., a clear distinction must be made between the vestibule of the nose and the proper mucous cavity. The former is lined with skin, and is not part of the nose cavity proper, but only leads to it. Contamination with the lining of the vestibule is difficult to avoid, even when this source of error has been realized.

In the dusts and crusts of mucus and debris deposited among the vibrissæ of healthy subjects, microorganisms are never absent, and are usually abundant. On the Schneiderian membrane the reverse is the case; under normal conditions microorganisms are never plentiful here, are rarely even numerous, and in more than 80 per cent of cases no organisms whatever are found and the mucus is completely sterile. The occurrence of pathogenic organisms must be so infrequent that their presence on the Schneiderian membrane can be regarded only as quite exceptional.—*Archives of Otology.*

PRESCRIBE LISTERINE

FOR PATIENTS WEARING
BRIDGE WORK OR DENTURES

AND AS A GENERAL

Antiseptic and Prophylactic Wash
For the Mouth and Teeth . . .

✦ ✦ ✦

LISTERINE

Is kept in stock by leading dealers in drugs everywhere, but in consequence of the prevalence of the **SUBSTITUTION EVIL** we earnestly request **DENTAL PRACTITIONERS to PRESCRIBE LISTERINE IN THE ORIGINAL PACKAGE.**

✦ ✦ ✦

LISTERINE is invaluable for the care and preservation of the teeth. It promptly destroys all odors emanating from diseased gums and teeth, and imparts to the mucous surfaces a sense of cleanliness and purification; used after eating acid fruit, etc., it restores the alkaline condition of the mouth necessary for the welfare of the teeth, and employed systematically it will retard decay and tend to keep the teeth and gums in a healthy state. LISTERINE is valuable for the purification of artificial dentures and for the treatment of all soreness of the oral cavity resulting from their use. Patients wearing bridge work should constantly employ a LISTERINE wash of agreeable strength.

LISTERINE is used in various degrees of dilution. One to two ounces of LISTERINE to a pint of water will be found sufficiently powerful for the general care of the deciduous teeth of children, whilst a solution composed of one part LISTERINE and three parts water will be found of agreeable and thoroughly efficient strength for employment upon the brush and as a daily wash for free use in the oral cavity, in the care and preservation of the permanent teeth.

✦ ✦ ✦

LITERATURE DESCRIPTIVE OF LISTERINE MAY BE
HAD UPON APPLICATION TO THE MANUFACTURERS

LAMBERT PHARMACAL COMPANY,
ST. LOUIS.

The Great Fault

Hitherto existing in angular handpieces has been that the proper combination of gears, which would give all the required angles and yet be strong enough to withstand the great strain, was not found. In our new

"No. 1" Angle Attachment

we have succeeded in overcoming this difficulty, and we will guarantee it to require less repair and to outwear any angular attachment now on the market.

It can be attached to our "No. 1" Handpiece, or to a No. 6 or No. 7 Handpiece.

As will be seen from the cut, the bur can be held at either an acute, right or obtuse angle.

A No. 2 right angle bur can be used, so that no extra expense is necessary for special burs.

Finally, **the price is right.** Why pay more when you can get the best and most scientifically made Angle Attachment on the market for

$7.00.

Dental Protective Supply Co.,

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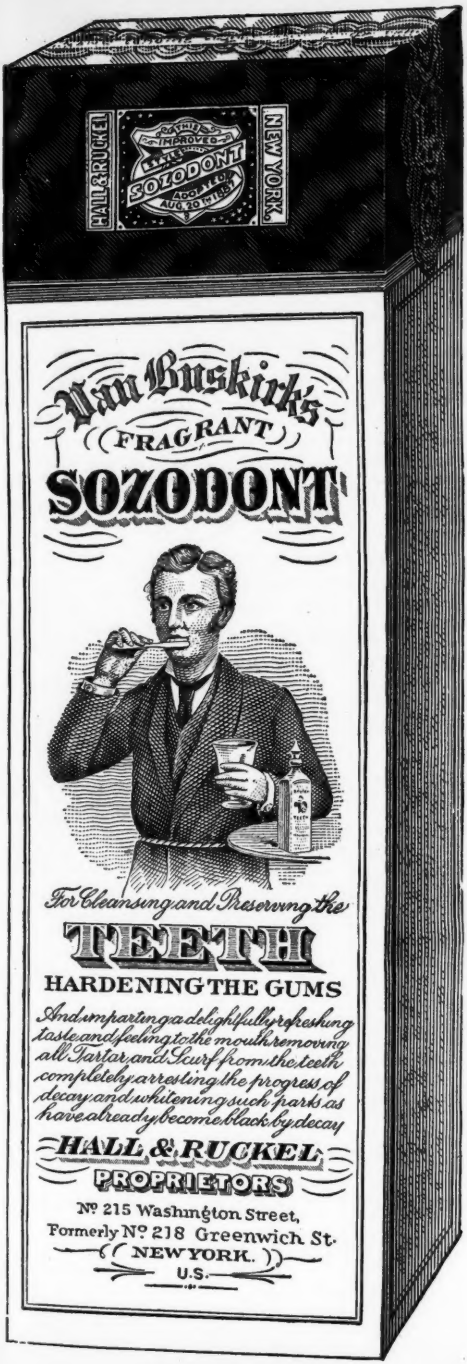
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For Cleansing and Preserving the
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And imparting a delightfully refreshing taste and feeling to the mouth removing all Tartar and Scurf from the teeth completely arresting the progress of decay and whitening such parts as have already become black by decay
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(FULL SIZE, AS SOLD.)

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Without danger, inflammation, waste of anesthetic or inconvenience. Saving 50 per cent.

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Bourdalle's Ethyl-Methyl-Cloride Tubes are of great advantage in all lesser surgical operations—on skin and other accessible parts. Convenient, sure, harmless, inexpensive and most efficient. Vaporize at 6°—others vaporize at 12.5° to 22° C, hence Bourdalle's save 50 per cent at least. Can use small quantity at any time; balance will keep indefinitely. This form, by Bourdalle, Paris, intensifies the efficiency in anesthesia and minimizes the amount necessary. This is considered the most perfect anesthetic—convenient, efficient and inexpensive—for Medical and Dental Surgery.

GLASS TUBES, 40 grams, $1.00. METAL TUBES, 100 grams, $5.00.

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Refilling Metal Tubes, $2.00 and $3.00.

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Electric Furnace

Will fuse any tooth-body in thirty minutes, and costs but a few cents to operate. There is absolutely no danger from checking or gasing the porcelain, the heat being under such perfect control that it can be varied gradually from 200 to 3100 degrees.

It is compact, clean and does not require an electrician to set it up or operate it.

The furnaces are made for all kinds of incandescent circuits.

Furnace and Rheostat, complete,	**$65.00**
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Furnace for Low Fusing Bodies,	**25.00**

For particulars address

The McBrair Electric Heating Company,

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FOR DENTAL USE

Pyrozone 3 per cent Solution.

A stable aqueous solution of H_2O_2 conforming to the standard of the United States Pharmacopeia. Supplied only in 4 oz., chemically clean, glass-stoppered bottles.

INVALUABLE as a mouth-wash and as a cleansing agent for the teeth. Destroys pus, blood-stains, and green-stains on the teeth. We would call special attention to the fact that **Pyrozone 3 per cent Solution** is of the strength ordered by the United States Pharmacopeia. Aqueous solutions of a higher strength are placed on the market by various makers, but these contain, of necessity, excessive amounts of acids and other preservatives, and are extremely liable to violent decomposition. Where a stronger preparation is required, it should be extemporaneously prepared by shaking the strong ethereal solutions of Pyrozone with water.

Pyrozone 25 per cent Solution.

(Ethereal.) Supplied only in small glass tubes.

INVALUABLE for bleaching teeth and for topical applications in Pyorrhea Alveolaris. Pyrozone 25 per cent is also an excellent hemostatic. By shaking two parts of Pyrozone 25 per cent Solution with one part of water and separating the mixture through a funnel, an aqueous 25 per cent Solution can be prepared in a few minutes. This can be diluted to any strength required. Weaker Ethereal Solutions can be prepared by simply diluting the 25 per cent Solution with the requisite amount of pure sulphuric ether.

NOTE—To open tubes of Pyrozone 25 per cent Solution, wrap the tube in a cloth and nip off the top with a pair of forceps having concave beaks. Do not hold the tube in the open hand, as the warmth of the latter is sufficient to boil the ether and so cause pressure to develop.

PYROZONE SOLUTIONS ARE FREE FROM BARIUM SALTS, EXCESS OF ACID, GLYCERIN, SALICYLIC ACID OR OTHER INJURIOUS PRESERVATIVE.

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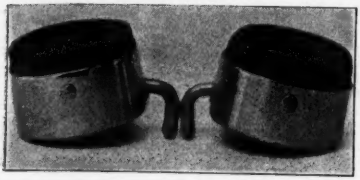
1101-3 Champlain Building, Chicago.

THE UNIQUE DENTAL FULCRUM



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NO TUG OR PULL. Just snap the Fulcrum on your dental forceps, then apply the forceps to the teeth in the usual way, but **don't pull.** Simply **PRESS ON THE FULCRUM.** This will extract **ANY TOOTH,** upper, lower, front or back, with the utmost **EASE** and **SAFETY.**

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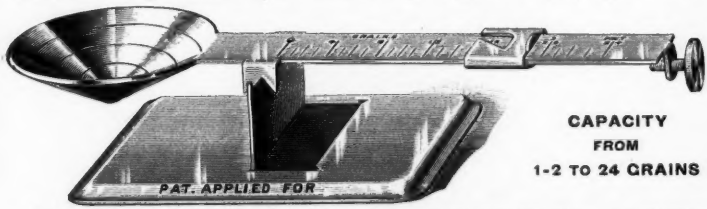

CAPACITY FROM 1-2 TO 24 GRAINS

The little scale above illustrated is constructed on scientific principles and is *absolutely correct.* The knife edge bearing or fulcrum is made of steel, so that it cannot become worn or damaged by use. By means of a simple contrivance, a hair balance may be easily and quickly secured. Dentists will find the scale convenient for weighing mercury and alloys, for making definite solutions of drugs, weighing precious metals and numerous other uses in the operating room and laboratory. Physicians who habitually dispense their own drugs, or who may be called upon to do so in an emergency, will find the scale perfectly reliable and almost indispensable. It is beautifully finished, nickel plated, and packed in a neat box ¾ in. x 1¾ in. x 4⅜ in., and may be easily slipped into the pocket.

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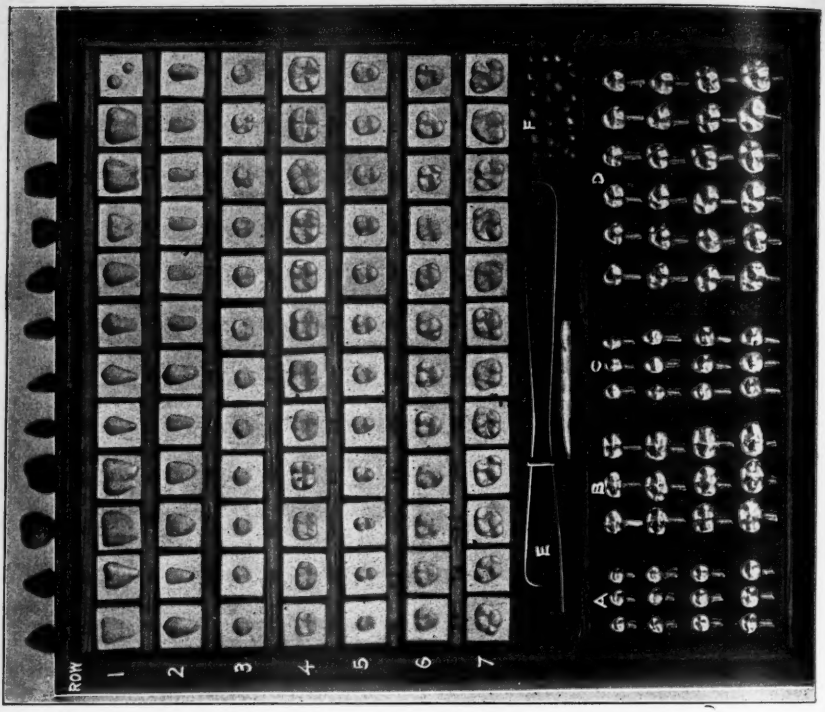

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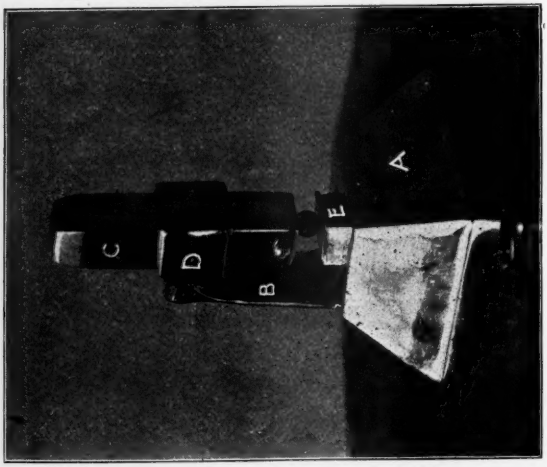
Yours truly, J. H. KENNERLY, D.D.S.,
Prof. Prosthetic Dentistry and Crown and Bridge Work, Marion-Sims College of Medicine, Dental Dept.



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